PRACTICAL SURGERY ILLUSTRATED

By VICTOR PAUCHET

Translated by F R. B ATKINSON, M D, C M (*Edin Univ*) *With an Introduction by* SIR CHARLES GORDON-WATSON, C M G, F R.C.S, *Surgeon and Joint Lecturer in Surgery, St Bartholomew's Hospital*

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GENERAL INTRODUCTION

THE reputation of Victor Pauchet as a bold and brilliant surgeon stands high in Paris

"Practical Surgery Illustrated," translated into English by Dr F R B Atkinson, cannot fail to enhance that reputation, and will enable English surgeons to study Pauchet's methods in detail with both pleasure and profit.

"Practical Surgery Illustrated" makes no claim to be a text-book of operative surgery It claims rather to illustrate operations as practised by the author, and these claims are well substantiated The illustrations are drawn from life, the text explains them. The author presents his methods in a series of living pictures in a manner which should appeal to the practical surgeon

English surgeons will note with interest that local, spinal, and splanchnic anæsthesia have practically supplanted general anæsthesia in Victor Pauchet's practice.

C GORDON WATSON

INTRODUCTION TO VOLUME IV

Recurring Dislocation of the Shoulder —Pauchet makes an incision along the mid axillary line, retracts the vessels and nerves forwards and the subscapularis backwards, and then resects an ellipse of redundant capsule and sutures the overlapped margins

Tumours of the Breast.—For carcinoma Pauchet advocates deep radiotherapy eight days before operation and three weeks after

He performs a radical operation on orthodox lines, but divides the clavicular portion of the pectoralis major and clears the axilla before dividing the sternal portion

Duodenal Ulcer —Duodenal ulcer has been discussed in previous volumes but the author returns to the subject here to describe marginal gastro-enterostomy performed under splanchnic anæsthesia The great omentum is separated from the greater curvature, so that the posterior surface of the stomach can be inspected, the jejunal loop is passed through the meso-colon and the anastomosis is made at the greater curvature When there is much fat in the meso-colon he favours the pre-colic route The omentum is sutured to the stomach in front of the anastomosis Pauchet favours a trans verse incision. He claims 70 per cent. of cures, and believes that failure must often result from neglect to treat cholecystitis, appendicitis or chronic intestinal stasis at the same time, by cholecystectomy, appendicectomy, or ileo-sigmoidostomy In 5 per cent. of cases he attributes the failure to jejunal ulcer

Cholecystitis.—The responsibility for catarrhal cholecystitis is laid at the door of intestinal stasis Pauchet argues that the portal vein becomes overloaded with *Bacillus coli* which the liver eliminates through the biliary channels Infection and stagnation in the gall bladder follow and cause a deposit of bile salts He believes that all stones are formed in the gall bladder itself, and that an important function of the gall bladder is to act as an elastic safety valve to the pancreas when the papilla is obstructed. Quoting Courvoisier he states that 84 per cent of cases of gall-stones in the common duct are associated with contracted and atrophied gall-bladders

Pauchet favours early operation for gall-stones—*i e*, as soon as a diagnosis is established—and does not believe in medical treatment In fact he regards medical treatment as a source of danger and considers that it may be responsible for displacing stones from

comparative safety in the gall bladder to a danger zone in the common duct.

Cholecystectomy *versus* cholecystostomy is discussed, and the former is favoured unless the gall bladder appears healthy

The technique of cholecystectomy and choledocholithotomy is discussed in detail and very freely illustrated Abdominal drainage is advocated as a routine.

Appendicectomy—Pauchet favours operation at the commencement of an attack when opportunity arises, when called in some days after the commencement of the attack he prefers to await quiescence, unless, of course, the signs suggest gangrene or perforation. When the attack has subsided he imposes a vegetarian diet and operates a fortnight later after a mild attack, and from two to six months later when inflammation has been extensive, the area has been boggy, or an abscess has been incised or opened spontaneously—*i e.*, he awaits the resolution of adhesions

Pauchet advocates cæco-plication when there is evidence of stasis, and wisely states that "a great number of chronic appendicitis are improved, not by removal of the appendix, but by plication."

Cancer of the Cæcum has been previously discussed. This chapter illustrates the operation of right hemi-colectomy with side-to-side ileo-sigmoidostomy as performed on a fat subject.

The author favours end to-end anastomosis after resection, except in the obese, when he regards this method as dangerous, because the subperitoneal fat is liable to prevent sound union

Iliac Anus—Pauchet splits the obliques and uses a metal rod or alternatively a bridge of skin He does not suture the gut to the parietes. He educates the patient to secure a continent anus by training him to hold small quantities of injected fluid.

Grave Forms of Colitis—Pauchet classifies severe colitis under the headings (1) hæmorrhagic with suppuration, (2) stenotic—*i.e.*, those cases resulting in inflammatory stricture following diverticulitis, etc , (3) polypoid—*i e*, multiple polyposis, (4) peritoneal—*i e*, pericolitis.

For acute hæmorrhagic colitis he advocates appendicostomy or cæcostomy and favours the latter or alternatively a transverse colostomy regarding an artificial anus as essential Partial colectomies for polyposis and diverticulitis are depicted.

Cicatricial Stricture of the Rectum—Pauchet advocates perineal extirpation for rectal stricture unless inflammatory complications

exist, when he favours temporary colostomy, followed some months later by resection from below

The method as employed for a female patient is illustrated but not described

An incision is made in the perinæum between the anus and vagina The anterior wall of the rectum is separated from the vagina up to the pouch of Douglas The anal canal is sutured up and then dissected clear of the external sphincter by a second incision surrounding the anus Resection is then completed via the anterior incision, and the upper cut end is drawn down through the sphincter and sutured to the skin.

Chapters X , XI , XII , and XIII deal with **recto-vaginal fistula, retroversion, perineo-vaginal hysterectomy,** and **aseptic tumours of the adnexa** (in brief)

The author considers that "abdominal hysteropexy ought to be expunged from the operative treatment of posterior uterine displacements."

Under the title of "Ligamentopexy," Pauchet describes the operation he has devised to correct displacement. The method is extremely simple Forceps are thrust through the broad ligament from behind on either side, the round ligaments are drawn back through these openings and sutured together behind the uterus. The method is very clearly illustrated. Sacral anæsthesia, a transverse incision, and the author's special retractors and forceps for holding the uterus are worthy of notice

Though Pauchet prefers the Wertheim hysterectomy, he often employs the perineal method for feeble subjects and especially for the obese He has followed Schauta's method in the past, but recently has adopted Cunéo's operation.

The author has succeeded in illustrating this somewhat complicated operation so clearly that the text seems almost unnecessary

O GORDON WATSON

January 1925

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PRACTICAL SURGERY ILLUSTRATED

I

RECURRING DISLOCATION OF THE SHOULDER *

POSITION OF THE PATIENT —Dorsal position, the arm on a table, abducted at slightly more than a right angle

CUTANEOUS INCISION —Mark out the axillary vessels and the prominence of the head of the humerus The middle of the incision is to correspond with the head of the bone The same incision as in ligature of the axillary artery in the axilla Divide the skin more behind, in the axillary axis posterior to the axillary vessels Make a cutaneous incision 10 to 13 centimetres in length, according to the plumpness of the subject, the length is not of any importance, it is necessary to see clearly The cutaneous cicatrix is invisible

DIVISION OF THE CELLULAR TISSUE OF THE AXILLA by the knife and grooved director

EXPOSURE OF THE TENDON OF THE LATISSIMUS DORSI, recognised by its shiny appearance

EXPOSURE OF THE SUBSCAPULARIS MUSCLE —Its lower border is contiguous to the upper border of the latissimus dorsi This is the fleshy part of the muscle Expose the muscular surface by a compress on forceps The operator in this way exposes the vessels and the subscapular nerve As these vessels might cause trouble during the operation cut them between two ligatures The operative field is thus more bloodless and more exposed to view

EXPLORATION FOR THE CIRCUMFLEX NERVE —The circumflex artery and nerve, which wind round the head of the humerus, pass between the latissimus dorsi and the subscapularis They must be carefully exposed in order to see them Pass a thread under the nerve to act as a retractor Injury to the nerve is the only possible

* The accompanying drawings have been made from the operation performed on a very muscular subject, thirty years of age, suffering from recurrent intra-coracoid dislocation, at the St. Michel Hospital, October 20 1921 On August 15, 1922 in spite of daily energetic movements, there had been no recurrence

accident It can and ought easily to be avoided Have a good look at the nerve before turning it aside

Exposure of the Articular Capsule —*Free the lower border* of the subscapularis, mobilise it, and pull it back from above by a retractor The capsule comes into view

External Examination of the Joint —Explore extensively *the external surface* of the capsular sheath with the grooved director, and lay bare the capsule slowly, with patience, and widely, by a gauze compress on forceps Mark out the edge of the glenoid cavity from the head of the humerus Note the enlarged pathological part of the capsule, and the extent of the fibrous tissue which must be resected

Internal Examination of the Joint —Incise the capsule along its axis, at what appears its most lax part With curved scissors, introduced into the interior of the joint, make a note of *the most distended and enlarged part, and of the amount of tissue* that must be removed If any osseous or cartilaginous fragments exist, excise them

Resection of the Capsule —Excise a lozenge-shaped piece of the capsule with curved scissors In order to facilitate suturing the two lips, it might be a good thing to separate the capsule for 1 centimetre, on each side of the opening so as to make overlapping easy when the two edges of the capsule are brought into apposition

Suture of the Capsule —*Bring together* the two lips of the button hole opening in the capsule by strong silkworm gut (three stitches in U) in such a way that the two capsular layers will overlap each other, so that, after cicatrisation the capsule is thickened at this point

Drainage and Suture —Place two small drainage-tubes in contact with the capsule which nearly corresponds to the apex of the axilla, stitch the skin with silkworm gut

Dressing —*Bring* the arm to the side of the body as after amputation of the breast, remove the drainage-tubes at the end of forty-eight hours Place the arm again at the side of the body and keep it immobile for three weeks

This operation only requires anatomical knowledge of the region The operation lasts half an hour at the outside The patient can get up the day after the operation, and can leave the hospital at the end of eight days

The good results of the operation depend on the perfection with which the cause of the recurrence has been removed in default of this, the intervention is useless

The original dislocation was accompanied by tearing of the capsule, either along the edge of the glenoid cavity, at its insertion on the anatomical neck of the humerus, or at a point of the capsule between its insertions The rupture of the capsule was a result of hyperabduction after cicatrisation of the capsule, enlargement of its anterior surface occurred, so that the head being no longer fixed and held in front, dislocated again, the operation consists, then, in resecting this exuberant part of the capsule so that the head has not a large space in front of it The axillary route is an anatomical one, and does not wound the parts or cause mutilation, but the space for exploration and for operation is not very large it is necessary to make up the deficiency by patient examination and by deductions gained from experience The operator must be careful not to leave a part of the capsule thin or open, or with the lips not sutured together, as they predispose to recurrence The lesions of the bones are not always identical The traumatism resulting from hyperabduction, instead of separating the capsule from the glenoid edge, may detach the anterior half of the osseous border of the glenoid, and the head of the humerus may protrude between the two fragments of the glenoid cavity In this event, any capsulorrhaphy or capsulectomy would be insufficient The two bony fragments must be sutured.

In a case reported by Thomas* the anterior half of the glenoid cavity had been worn away so that the anterior edge of the glenoid was altered into an inclined plane, a condition favourable for the production of anterior displacements of the head The first operation (capsulotomy) failed. The operator performed a second operation in which he hollowed out a new glenoid cavity to receive the head There had been no recurrence after eleven years

Finally, it may happen that the operator, finding insufficient space for exploration and excision of the capsule, is obliged to cut the subscapularis this sacrifice is preferable to an insufficient and useless operation

Luxation is generally the result of an articular fracture with mutual displacement of the two fragments a recurrent dislocation is nothing else but an un united fracture a pseudo-arthrosis, with

* Habitual or Recurrent Dislocation of the Shoulder by T Turner Thomas, *Surgery Gynæcology and Obstetrics* 1921 xxxii., 291.

separation of the two fragments When the dislocation is cured the capsular cavity returns to its normal dimensions, because the two edges of the torn capsule are reunited or because the detached bony fragment has become ossified to the surface from which it was separated But if the patient move his arm too soon, so that the head of the humerus is placed in the position which caused the luxation, the head stands in the way of capsular or bony union the capsule is thereby enlarged, and recurrences are produced when an exaggerated movement places the limb again in hyperabduction accompanied or not by external rotation

If the luxation be associated with extensive laceration of the bone, and there be delay in reducing the head of the humerus, luxation is inevitably reproduced, the only treatment is bony suture of the two humeral or glenoidal fragments It is the exception

To sum up, recurrent dislocation of the shoulder injures the bone, and if the lesion be considerable it is necessary to prevent recurrence by an osteo-synthesis But usually it is sufficient to repair the lesion in the capsule without troubling about the osseous affection



FIG 1 —RECURRING DISLOCATION OF THE SHOULDER.

Capsulorrhaphy by the axillary route. Cutaneous incision in the centre of the axilla. The cross corresponds to the prominence of the head of the humerus. The dotted line which indicates the cutaneous incision, is behind the bunch of nerves and vessels, and not over it. The incision begins at the top of the armpit.

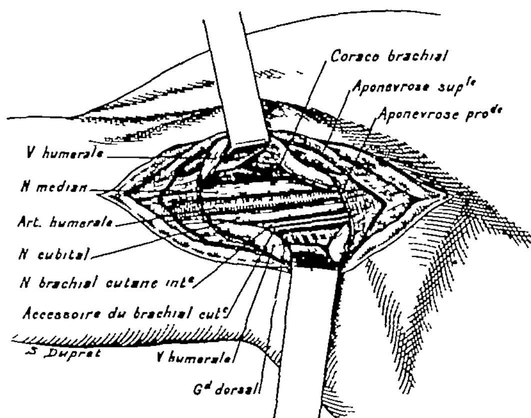


FIG. 2.—RECURRING DISLOCATION OF THE SHOULDER.

Capsulorrhaphy by the axillary route. Bundle of vessels and nerves. The appearance of the structures at the point where the incision is made in order to reach the capsule.

V humérale=Brachial vein. *Coraco-brachial*=Coraco-brachialis. *V médian*=Median nerve. *Aponévrose supfe.*=Superficial aponeurosis. *Art humérale*=Brachial artery. *Aponévrose prode.*=Deep aponeurosis. *N cubital*=Ulnar nerve. *V brachial cutané inte.*=Internal cutaneous nerve. *Accessoire du brachial cutě.*=Lesser internal cutaneous nerve. *Gd dorsal*=Latissimus dorsi.

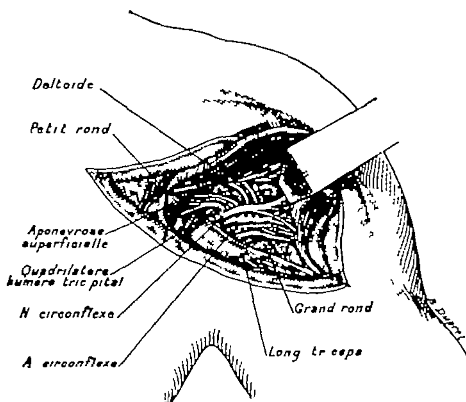


FIG 3.—RECURRING DISLOCATION OF THE SHOULDER.

Capsulorrhaphy by the axillary route. Back view Course of the vessels and of the circumflex nerve when they have passed from the axillary into the posterior part of the scapulo-humeral region.

Deltoide=Deltoid. *Petit rond*=Teres minor *Aponévrose superficielle*=Superficial aponeurosis *Quadrilatère huméro-tricipital*=Quadrilateral space. *N circonflexe*=Circumflex nerve *Grand rond*=Teres major. *A circonflexe*=Circumflex artery *Long triceps*=Long head of triceps

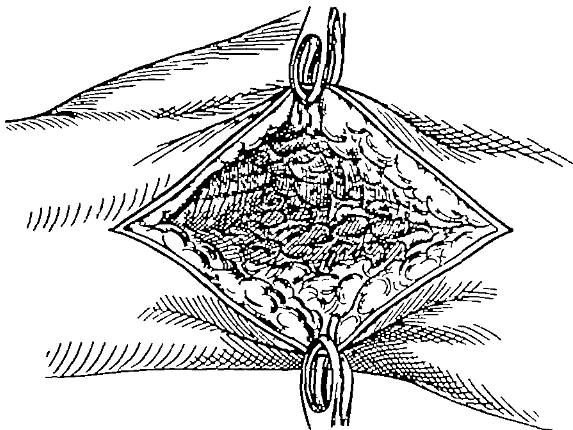


FIG 4.—RECURRING DISLOCATION OF THE SHOULDER.
Capsulorrhaphy by the axillary route. Division of the skin and of the subcutaneous cellular tissue of the axilla.

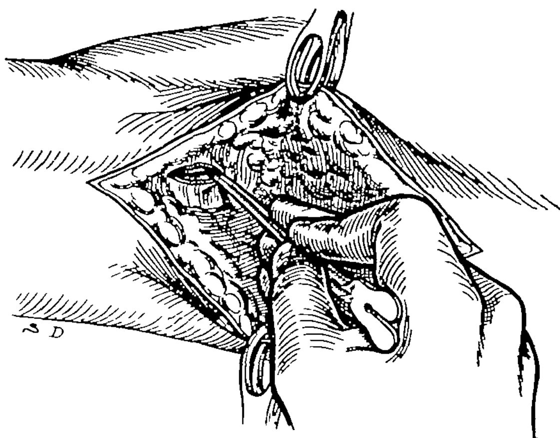


FIG. 5—RECURRING DISLOCATION OF THE SHOULDER.
Capsulorrhaphy by the axillary route. Division of the upper part of the brachial aponeurosis. The reader perceives the axillary vein which will be brought forward. The grooved director feels for the tendon of the latissimus dorsi.

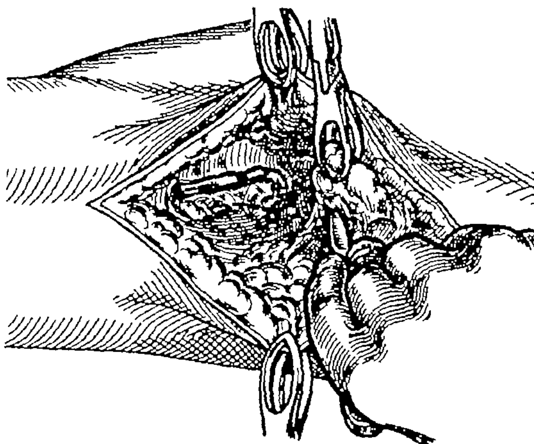


FIG 6.—RECURRING DISLOCATION OF THE SHOULDER.

Capsulorrhaphy by the axillary route. The aponeurosis is divided; the axillary vein is s under the aponeurosis. The operator finding the space insufficient, incises the cellu tissue *of* the axilla towards the thoracic wall.

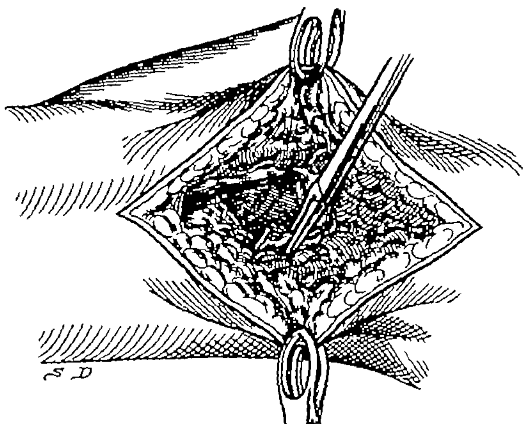


FIG 7.—RECURRING DISLOCATION OF THE SHOULDER.

Capsulorrhaphy by the axillary route. Laying bare the subscapular fossa: above the axillar vein into which the infrascapular vein opens on the left, the tendon of the *latissimu dorsi*, only slightly exposed. At the bottom, the subscapularis muscle conceals th ... and the nerve.

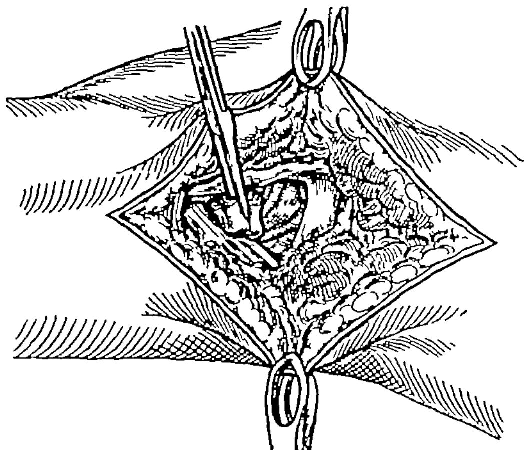


FIG 8.—RECURRING DISLOCATION OF THE SHOULDER.

Capsulorrhaphy by the axillary route. The tendon of the latissimus dorsi is laid bare by the compress. Above, the axillary vein on the right, the inferior scapular vein, and in the triangle bounded by the latissimus dorsi and the two veins, circumflex vessels and nerve. The nerve is the lowest structure.

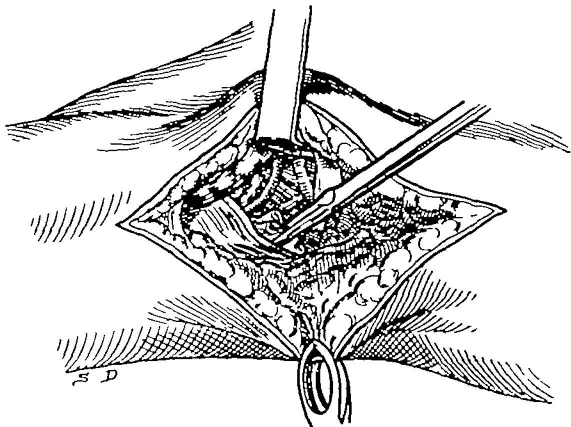


FIG 9.—RECURRING DISLOCATION OF THE SHOULDER.

Capsulorrhaphy by the axillary route. Freeing the subscapularis muscle with the compress. above and to the left. the axillary vein into which the circumflex vein opens. Higher up, the circumflex artery Lower running crossways, the circumflex nerve. To the right, the inferior scapular artery and then the vein.

FIG 10 —RECURRING DISLOCATION OF THE SHOULDER.

Capsulorrhaphy by the axillary route. The grooved director frees the inferior scapular vessels To the left, circumflex vessels and nerve.

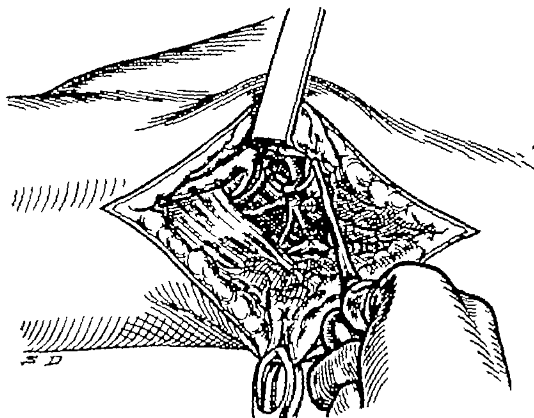


FIG 11 —RECURRING DISLOCATION OF THE SHOULDER.

Capsulorrhaphy by the axillary route Ligature and division of the inferior scapular vessels to make the field of operation clear These two vessels, moreover cover the subscapularis muscle The vein runs the risk of being torn during the manipulations: its laceration would flood the field of operation.

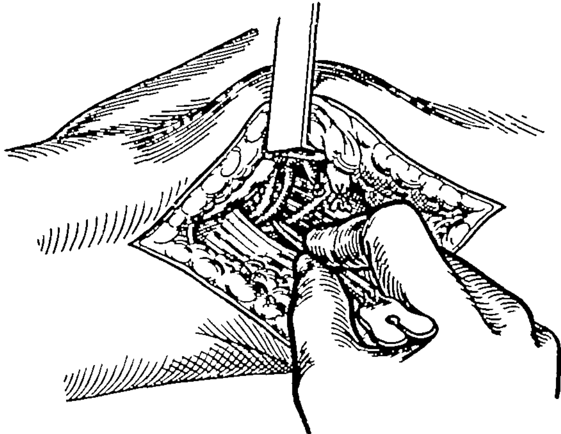


Fig. 12.—Recurring Dislocation of the Shoulder.

Capsulorrhaphy by the axillary route. Liberation of the subscapular nerve from above downwards, the subscapular vessels are seen on the left, and the subscapular nerve, nearly horizontal, on the right.

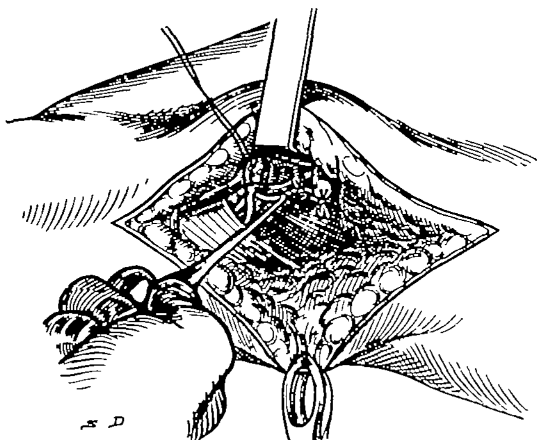


Fig. 13.—Recurring Dislocation of the Shoulder.

Capsulorrhaphy by the axillary route. The curved needle lifts up the circumflex nerve in order to bring it outside the field of operation, so that it shall not be injured during the manipulations.

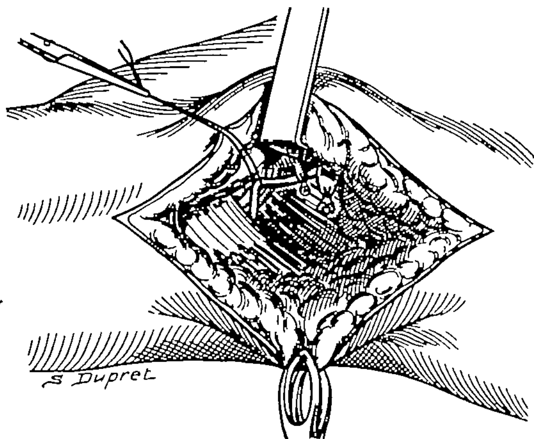


FIG 14.—RECURRING DISLOCATION OF THE SHOULDER.

Capsulorrhaphy by the axillary route. A thread pulls aside the circumflex nerve; the subscapularis muscle is distinctly seen the inferior scapular vessels have been cut, and the circumflex nerve has been retracted.

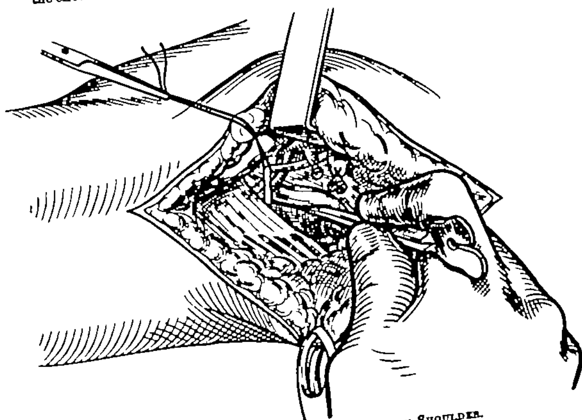


FIG 15.—RECURRING DISLOCATION OF THE SHOULDER.

Capsulorrhaphy by the axillary route. The grooved director frees and raises the inferior border of the subscapularis in order to expose the capsule which corresponds to the beak of the grooved director

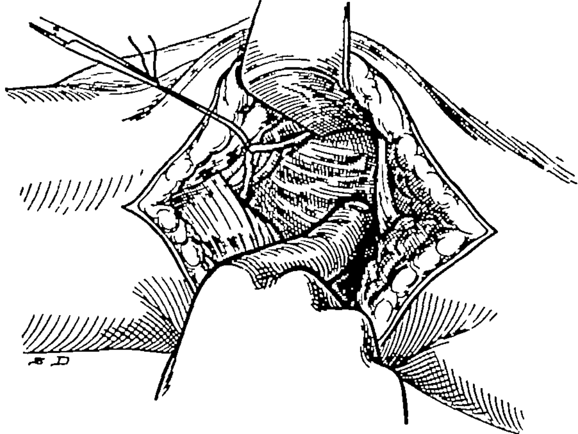


Fig 16.—Recurring Dislocation of the Shoulder.

Capsulorrhaphy by the axillary route. The capsule is well exposed; the subscapularis is raised by a vaginal retractor The circumflex nerve is pulled back by a thread the finger recognises the space between the scapula and the humerus.

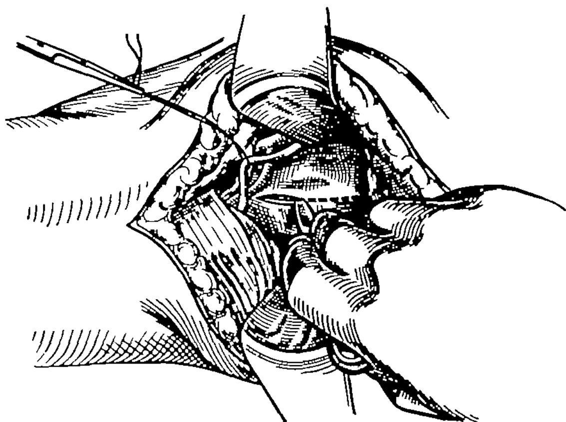
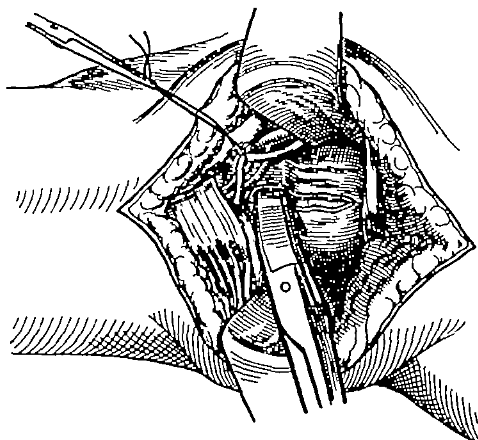
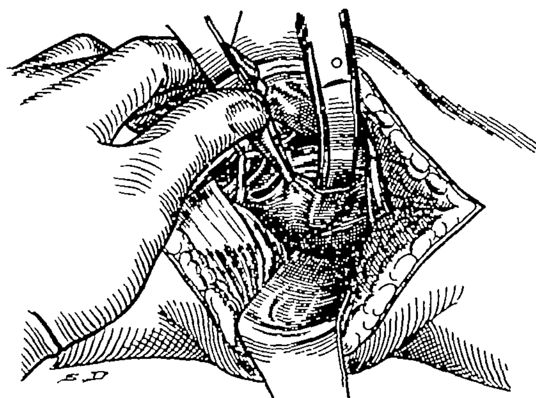


Fig 17.—Recurring Dislocation of the Shoulder.

Capsulorrhaphy by the axillary route. The knife incises the whole of the capsule and at the point where it appears to form the cavity made by the injury previous to the recurring dislocation.





FIGS. 21 AND 22.—RECURRING DISLOCATION OF THE SHOULDER.

Capsulorrhaphy by the axillary route Liberation of the capsular flaps at the articular surface of the capsule by means of scissors.

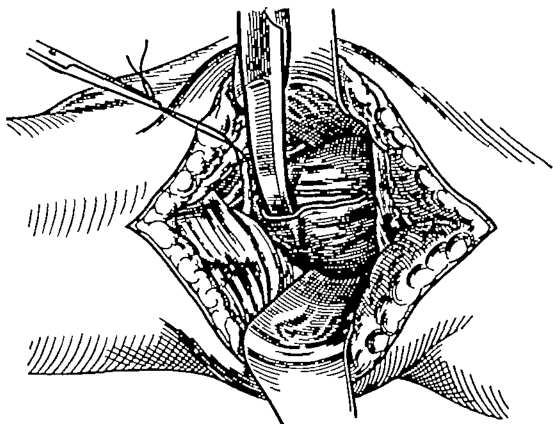


Fig 23.—Recurring Dislocation of the Shoulder.

Capsulorrhaphy by the axillary route. Liberation of the capsular flaps at the articular surface of the capsule by means of scissors.

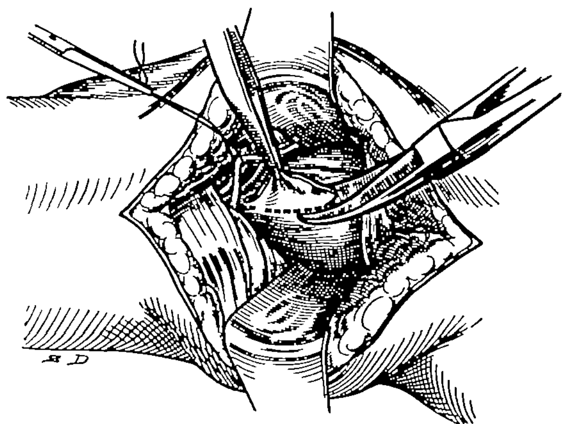


Fig. 24 —Recurring Dislocation of the Shoulder.

Capsulorrhaphy by the axillary route. Excision of the exuberant part of the capsule.

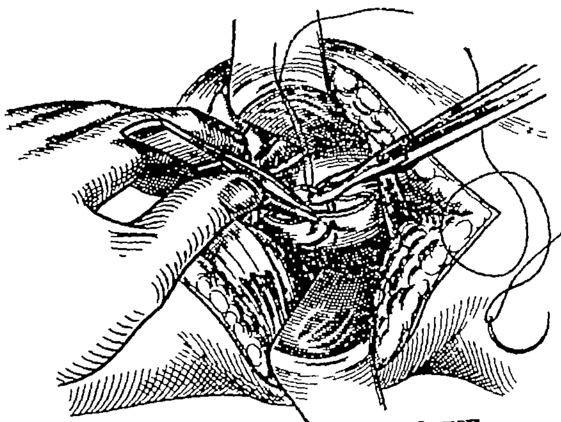


Fig 25.—Recurring Dislocation of the Shoulder.

Capsulorrhaphy by the axillary route. Suture of the two lips of the resected capsule. Note the direction of the needle and the form of the suture. Observe this suture in the succeeding figures.

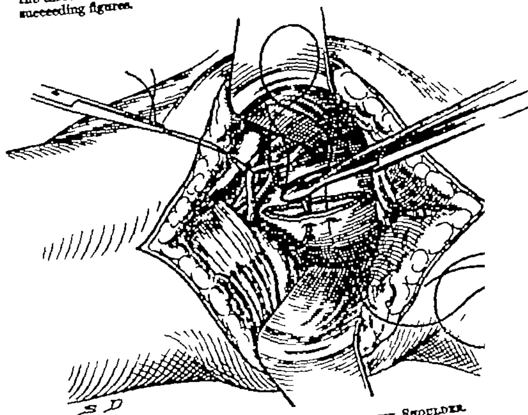
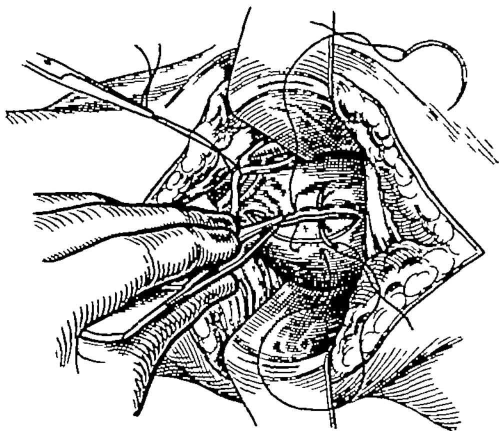
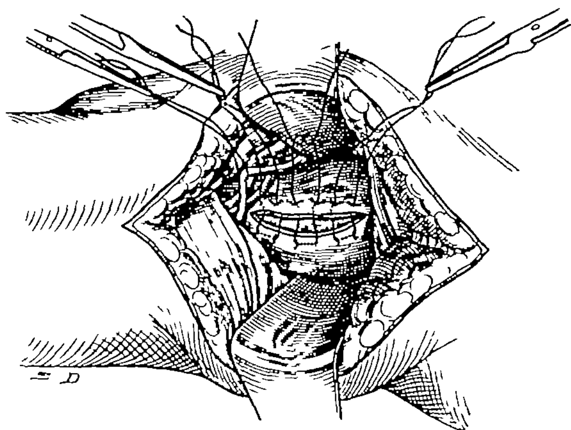


Fig 26.—Recurring Dislocation of the Shoulder.

Capsulorrhaphy by the axillary route. Suture of the resected cap





FIGS. 27 AND 28.—RECURRING DISLOCATION OF THE SHOULDER.
Capsulorrhaphy by the axillary route. Suture of the resected capsule.

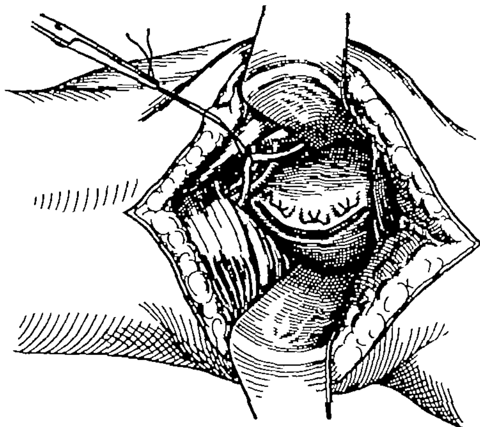


FIG 29—RECURRING DISLOCATION OF THE SHOULDER.

Capsulorrhaphy by the axillary route. Suture of the resected capsule. The two lips over lap; this makes the capsule firm.

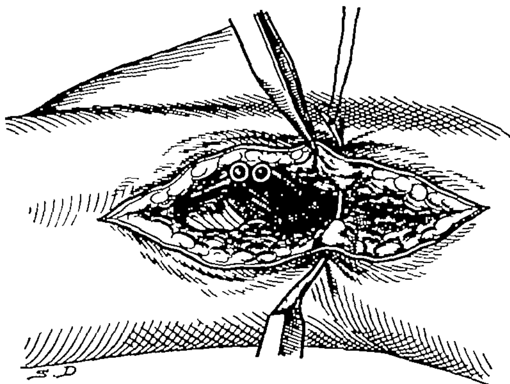


FIG 30—RECURRING DISLOCATION OF THE SHOULDER.

Capsulorrhaphy by the axillary route. Drainage for twenty four hours. Suture of the skin.

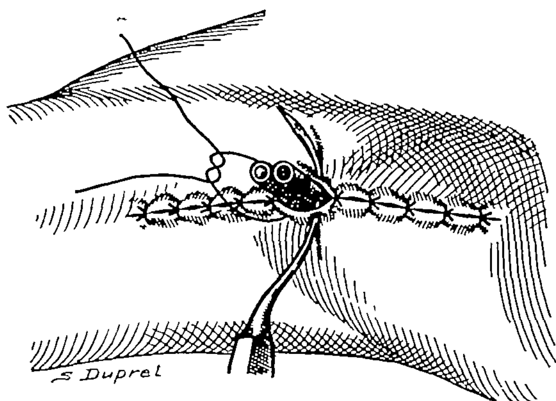
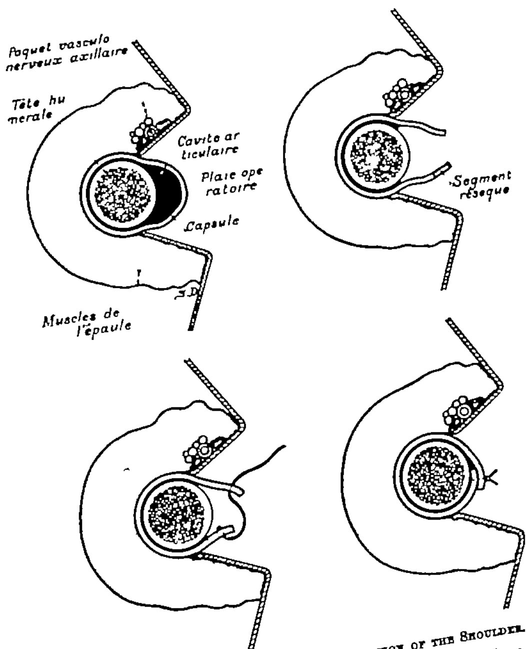


FIG 31 —RECURRING DISLOCATION OF THE SHOULDER.
Capsulorrhaphy by the axillary route. Cutaneous suture.



FIGS. 32 AND 33.—RECURRING DISLOCATION OF THE SHOULDER.

Capsulorrhaphy by the axillary route. Diagrams of the operation. Above, one of the retractors raises the bundle of nerves and vessels.

Paquet vasculo-nerveux axillaire=Axillary bundle of vessels and nerves. *Cavité articulaire*=Articular cavity *Tête humérale*=Head of the humerus. *Plaie opératoire*=Operation wound. *Capsule*=Capsule. *Muscles de l'épaule*=Muscles of the shoulder *Segment réséqué*=Resected segment.

II

TUMOURS OF THE BREAST

A TUMOUR composed of formed, typical, normal tissue is an innocent tumour A tumour comprising a typical embryonic element is a malignant tumour If the new growth be formed of conjunctival tissue, it is a sarcoma if of epithelial tissue, it is an epithelioma a cancer

Every tumour found on clinical examination ought to be removed If the diagnosis be in the slightest degree doubtful, as large a biopsy as possible even before radical removal, ought to be performed, this not only serves to make a diagnosis but often, and especially, a prognosis The richer the cancer is in conjunctival tissue, the better the prognosis, because it indicates a tendency of the body towards defensive reaction.

Independently of the histological examination, the clinician ought to note the patient s general condition. Formerly, Morestin had well understood the differences which separate cancer of the tongue, white in colour from that with a red tint The white colour indicates to the surgeon patients with very slight powers of resistance, doomed to every complication. Patients with cancers with a red tint, on the contrary show greater vitality and give numerous successful results It is the same with all cancers The patient who reacts well, and appears to be the possessor of a strong vitality, certainly offers favourable conditions for treatment, be it by the knife, by radium, or by the X rays

Consequently every time the patient s blood-count is a good one, with the kidneys acting well, and the general appearance denoting great vitality, and the microscopic examination shows an abundance of connective tissue, the surgeon, the radium- or radio-therapeutist can give a favourable prognosis.

The surgeon may meet with the following tumours of the breast

(*A*) **Adeno-Fibroma.**—This is the type of an innocent neoplasm its structure consists of a conjunctival stroma, and of typical epithelial cells recalling the structure of the normal mammary gland In certain cases the adenoma is said to be cystic because it shows,

in its substance, some cavities filled with liquid, and lined by epithelium, sometimes vegetations are present, formed of large cells, which cover a thin connective tissue trabeculum. The tissues of these tumours preserve their normal mutual relationships There is never any excavation of the basal membrane which separates the epithelium from the subjacent connective tissue The connective tissue itself shows no embryonic character as in sarcoma The following anatomo-clinical types can be noted

Hypertrophic Form —Diffuse adeno-fibroma of the breast, the whole mammary gland is infiltrated, the lesion is bilateral, on section, the tumour presents a white appearance, granular at the periphery

Circumscribed Adeno-Fibroma —It is the most frequent type, the tumour is encapsulated and limited to one part of the breast, its size varies from that of a nut to that of an egg, it is lobulated, and surrounded by a capsule of its own, formed of loose connective tissue which allows the mass to be enucleated by a blunt instrument On section, it is of a rosy white colour, and moist, of firm consistency Sometimes cystic cavities are scattered in the substance of the tumour

The capsule may be incomplete, it may be adherent to the neighbouring conjunctival tissue Sometimes many adeno-fibrous nodules may be found, partially encapsulated, in groups and adherent to each other by tracts of glandular tissue

Cystic Adenomata —On section, cavities containing yellow, viscous, brown or milky liquid, varying in size from a pea to a mandarine orange, are to be found. Some contain crystals of cholesterin or a viscid chocolate-coloured liquid. Their internal wall is smooth or presents some fibrous vegetations

What is the origin of these adeno-fibromata of the breast? Probably inflammation which may be related to a local cause, as an old puerperal mammitis, but more often to general causes, and following chronic intestinal stasis *

SYMPTOMS OF ADENO-FIBROMATA —Adeno-fibroma is seen especially in women from twenty to thirty years of age The diffuse form generally affects both glands *It often co-exists* with chronic intestinal stasis It often progresses by successive exacerbations The two breasts at first grow regularly the skin is white then reddish and then painful inflammatory attacks occur

* "Mammites stercorémiques," by Victor Pauchet Société de Médecine de Paris, December 22 1921

In certain cases the breasts can become huge and monstrous in size, the cutaneous venous network is dilated, on palpation, more or less hypertrophied mammary lobes are perceptible The progress of the disease is gradual, pregnancy accelerates it

Circumscribed adeno-fibroma represents the clinical type of encapsulated tumours

The patient, by chance, feels a painless, roundish tumour, which occupies, ordinarily, the superior and external part of the gland, it is smooth, slightly nodular, firm, elastic, and movable under the skin and the deep parts generally separate from the rest of the gland and painless on pressure The axillary glands are unaffected, the disease may be bilateral, it develops slowly, and may be stationary for a very long time An exacerbation may occur as a result of pregnancy or after menstruation It may become cystic or cancerous

(*B*) **Adeno-Sarcomata** —These are malignant connective tissue neoplasms

Under the naked eye the tumour is characterised by cavities filled with voluminous irregular vegetations which, on section, give the appearance of a puzzle The cavities contain a mucoid, ropy, yellow or greenish liquid, the vegetations are flabby, sometimes vibratory, and gelatinous The tumour may be very large, but remains encapsulated The nipple is not retracted, when the skin is ulcerated it is not from infiltration of the neoplasm into the dermis, but from progressive distension and mechanical erosion

Histological examination shows sometimes the appearance of a spindle-celled much more rarely than a round-celled sarcoma Large cavities full of blood are then found, due to interstitial hæmorrhages (hæmorrhagic pseudo-cysts)

These sarcomata progress rapidly and show great malignancy Sarcoma as epithelioma may be due to transformation of an adeno-fibroma

Clinical Appearance of Sarcoma —The tumour is generally large The skin is thin furrowed with large veins and is not adherent to the subjacent new growth, it does not infiltrate. The nipple is not retracted The nodular lobulated tumour is regular and firm It is always an encapsulated tumour perfectly free from the skin and the deep layers, and from the axillary glands The distended skin ulcerates, an excavated wound results through which vegetations protrude externally Metastases can be observed in the lungs and in the bones

Adenoma of the breast is sometimes removed by direct incision followed by enucleation, or by an æsthetic submammary incision * Local anæsthesia is sufficient †

Sarcoma is to be treated by complete amputation of the breast, without removal of the axillary glands

(*C*) **Dendritic or Intracanalicular Epitheliomata** —Histologically, they are epithelial tumours, but primarily innocent They form a cystic mass, *consisting of numerous cysts* varying from the size of a cherry to that of a nut, and collected in an encapsulated tumour surrounded by a zone of dense conjunctival tissue separating it from the rest of the gland The cysts are situated in the centre of the gland, under the nipple They *contain a blood stained fluid* On the internal surface of the cyst, red vegetations, resembling tumours of the bladder, are seen, they are formed of a thin, vascular, conjunctival trabeculum, covered with cylindrical epithelial cells These tumours arise from the galactiferous ducts, they develop from a polypoma They may become malignant, the epithelial process passing beyond the surrounding capsule

(*D*) **Atypical Infiltrating Epitheliomata (Cancer of the Breast)** — They often develop in the adenomatous or inflammatory nodule of one breast most often at the periphery of the left

We may mention that chronic mammitis adenoma, and chronic *constipation are closely connected*

Anatomy of the Common Form —Section of the gland shows a *hard nodule*, united with the neighbouring parts, the glandular and fatty tissues There is no trace of a capsule but, on the contrary, irregular prolongations, in the form of white tracts, joining the cancerous *nodules to the surrounding parts the nodule grates* under the knife It is hard its cut surface is white, fibroid and dotted over with yellow spots as a slice of an unripe pear' (Williams) These yellow points are produced *either by fatty* granular degeneration of the epithelial cells, or from the islands of fatty tissue When the surface of the tumour is scraped by a knife cancerous juice (albumin and *epithelial cells*) is *obtained*

Histologically the tumour is composed of a formed connective tissue stroma and of masses of atypical cubical *epithelial cells*,

* See Practical Surgery Illustrated, Vol I (Benn, London, 1921)

† "Anesthésie régionale" by Pauchet Sourdat and Labat (Doin Paris, 3rd edition)

recalling those of the acini of the breasts These epithelial cells are disseminated in the connective tissue stroma or arranged as complete branches hollowed out in the connective tissue In a more advanced stage the characteristic appearance of an alveolar cancer is found, a thin connective tissue mass circumscribing the alveoli, which are full of atypical epithelial cells

ANATOMICAL VARIETIES —Microscopic examination of a cancer furnishes at once a factor in the prognosis, the more abundant the fibrous tissue, the fewer the epitheliomatous elements, the better is the prognosis

(a) In the *scirrhus cancer*, a favourable case, the conjunctival stroma is abundant, recalling full grown cicatricial tissue, the epithelial branches are few and scattered. This abundance of reactionary tissue is seen at its maximum in the cases of atrophic scirrhus cancer of old women, where the breast is shrunken and flattened against the thorax, as if by a contracting cicatrix and in which the epithelial tissue is reduced to a minimum

(b) In *encephaloid cancer* on the contrary, the epithelial cells are abundant, and the connective tissue stroma slightly developed This form shows itself as a soft, voluminous tumour punctated with interstitial hæmorrhages, and is especially seen in young women and in cancers which grow rapidly

(c) In the so-called *colloid cancer*, section shows a gelatinous or waxy appearance The microscope reveals large cavities, surrounded by a thin connective tissue stroma and full of mucus, derived from mucoid transformation of the epithelial cells

Whatever the anatomical or clinical form, it is always an epithelioma

LOCAL EXTENSION OF THE NEOPLASM —The process rapidly invades the surrounding tissues, which it destroys and replaces The neoplastic cells exist beyond the perceptible cancerous nodule The adjoining mammary gland, apparently normal, already contains some microscopic nodules of cancer The smallest cancerous nodule at the beginning is often accompanied by small *foci of new* growth at the periphery of the glandular tissue This explains the early retraction of the nipple due to neoplastic infiltration of the galactiferous ducts and to the *fibrous* tracts which accompany them When the new growth has overstepped the limits of the gland it affects the cellular and fatty tissue surrounding it, either by means of the lymphatics or directly

Superficially, the newly formed tissue infiltrates the deep surface of the skin (infiltration), and invades the conjunctival tracts which unite the gland to the deep *surface of the dermis.*

The cutaneous epithelium finally becomes affected, and ulceration is thus produced

In the deep parts the tumour affects the aponeurosis of the pectoralis major, and then the muscle, either *directly or by the* lymphatic vessels In advanced cases the thoracic wall, the pleura and the ribs may be attacked.

INFECTION OF THE LYMPHATICS AND OF THE GLANDS —This is early The *first glands affected are those on the* internal thoracic surface of the axillary triangle they are to be found behind the pectorals, on the digitations of the serratus magnus, and along the external mammary vessels The other glands may be invaded secondarily as far as the apex of the axilla and the supraclavicular space

Such is the ordinary method of propagation by the lymphatics, but independently of it, the lymphatic infection is propagated to the glands of the mediastinum, following the internal mammary perforating branches, and even to the axillary glands of the opposite side *hence the necessity of examining the contents of both axillæ* Certain lymphatics, arising from the postero superior part of the breast, *enter directly the glands at the apex of the axilla,* crossing the pectoralis major without passing through the usual trunks (Goldmann), hence the necessity—

(*a*) Of always removing the highest axillary glands even if the cancer be in its earliest stage and quite small

(*b*) Of removing the pectoral muscles

(*c*) Of, in numerous cases clearing out the supraclavicular space

Some subcutaneous cancerous lymphatics can be observed in the very *malignant* forms of cancer (suppurative scirrhus) The skin of the mammary region and the thoracic wall may be raised by small white or reddish prominences, with tracts passing into *the skin constituting pustular scirrhus* when the process is very extensive and rapid the scirrhus *en cuirasse* results

GENERALISATION —Metastases can occur after and before the glandular stages (axillary and supraclavicular hollow) have extended. *Invasion may be hæmatogenous* and early

Their site varies pleura and lung (50 per cent) liver (25 per cent), vertebral column (25 per cent) Exceptionally, metastases

are noticed in other bones, in the kidney, in the stomach, in the pericardium, and in the suprarenal capsule, etc

Cancer of the breast amounts to half the malignant tumours in women It affects them especially between thirty and forty five years of age It grows quickly when the woman is young and when she is nursing Cancer often develops in the glands affected with chronic mammitis, as a result of chronic intestinal stasis

SYMPTOMS OF INTRACANALICULAR CANCER —It is especially seen between thirty five and fifty years of age, the patient complains of a hæmorrhagic discharge from the nipple This discharge soils the linen Palpation reveals a tumour, situated in the heart of the mammary gland, under the nipple, the size of a nut or of an egg, firm rather than fluctuating It is differentiated from the neighbouring tissues, and adheres to the mammary gland, without presenting any branching prolongations Traction on the nipple, which is not retracted displaces the subjacent tumour Pressure on the tumour causes an exudation of a small amount of hæmorrhagic serous fluid The glands are normal, the progress slow (ten years, fifteen years), until the time that neoplastic transformation occurs, it then takes on the clinical aspect of a cancer

SYMPTOMS OF CANCER OF THE BREAST (ATYPICAL INFILTRATING EPITHELIOMA) —A painless tumour, closely adherent to the mammary gland, from which it cannot be separated, never encapsulated it gives off prolongations into the glandular tissue In order to recognise adhesion to the skin, it is sufficient to pinch the skin of the breast above it it then has a wrinkled appearance later like the skin of an orange if there be extensive adhesion

Invasion of the axillary glands is relatively late, it must not be depended upon for a diagnosis which should be made immediately

At a more advanced stage the tumour alters the muscular levels and the glands Look then for retraction of the nipple, this retraction is fixed traction on it and pressure on the areola cannot reduce it Compare the diseased with the healthy side making the same examination on both sides Pressure on the tumour produces, sometimes a yellow or milky (rare) discharge from the nipple to find out if the tumour has spread deeply produce contraction of the pectoralis major by fixing the elbow against the chest and then cause the tumour to play on the deep surfaces before and during contraction By this means perceive the degrees of diminished mobility

Examine the axillary and supraclavicular glands, put the hand in the axilla, palmar surface inwards, behind the pectoralis major on the costal wall Here there are hard, indolent glands, difficult to note in fat women Afterwards, examine the supraclavicular glands (second stage of lymphatic infection), their invasion means a bad prognosis

If the *tumour be not operated* upon, the skin is invaded and ulcerates The edges of the ulceration are then raised and hard, and the skin which surrounds it has a livid, *thickened embossed* appearance The base of the ulceration is sanious, and covered with *cutaneous* vegetations, which bleed easily At this late period cancer of the breast becomes painful (arm shoulder etc) Sleep disappears, then signs of pleural effusion (dyspnœa cough) show themselves, spontaneous fracture of the femur, or of the humerus, and signs of spinal pressure (acute pain, paraplegia, etc) may occur

Fever supervenes, and may be due to chronic septicæmia from the ulceration, then anorexia, cachexia, and death. Some patients die rapidly, in a year of generalised miliary carcinoma, others drag on a long time The following clinical varieties may be observed

(*a*) *Acute Cancer* (*Carcinomatous Mastitis*) —Acute rapid form occurring in young women, especially during nursing The breast increases in size *en masse*, as an acute mammitis It is red, like wine, hot tense and painful The glands are invaded and joined to the tumour by tracts of cancerous lymphangitis The disease is sometimes bilateral its duration some months

(*b*) *Encephaloid Cancer* —Quite rare The primary tumour grows rapidly, and becomes soft it invades the skin which becomes violet in colour with fine varicose veins spreading over it Palpa tion perceives false fluctuation, when the neoplasm is soft The tumour ulcerates and discharges greyish fragments recalling cerebral substance (encephaloid)

Progress is rapid and death results from hæmorrhage septi cæmia etc

(*c*) *Pustular Scirrhus* —It is characterised by infiltration of the skin where small subcutaneous or cutaneous nodules appear reddish or whitish in colour due to infection of the lymphatics Scirrhus *en cuirasse* results from considerable extension of this diffuse cutaneous cancerous lymphangitis The skin of the mammæ and of the thorax is changed into an apron of hard tissue The

thickened skin, covered with red patches, forms a true breast-plate which binds the thorax and impedes the respiration

(d) *Atrophic Scirrhus*—This is a more innocent form, a kind of cicatricial epithelioma The abundant connective tissue masks the epithelial tissue, shrivels and deforms the gland, the nipple is retracted, the skin and the gland are adherent to the thorax Palpation reveals a small, hard nodule in the centre of the atrophied and retracted breast Its evolution is slow, it may last ten to fifteen years, without change in the general health

Cancer of the Breast in the Male—Rare (1 per cent) It presents the same characters as in woman. The intracanalicular epithelioma is relatively quite frequent

Diagnosis of a Tumour of the Breast—Explore the gland properly, do not seize the breast in the whole of the hand, otherwise there is a chance of mistaking the normal lobes of the gland for the tumour Palpate with a flat hand pushing the breast against the thorax In this way the normal, elastic and supple glandular lobes are felt If a tumour exist, a more or less hard circumscribed nodule will be distinguished

(A) *Encapsulated Tumours*—Think of an adenoma, especially if the woman be between twenty and thirty five years of age Adenoma generally the size of a nut is distinctly circumscribed, the nipple is sometimes drawn out, never retracted. The axillary glands are normal When there is only one adenoma, the diagnosis is easy, when it is multiple, uni or bi lateral, it is rather difficult to distinguish the nodules of chronic mastitis, these are never encapsulated, with a badly circumscribed area round them separating them from the normal gland They are painful on pressure, and are accompanied by enlarged axillary glands Adeno-sarcoma is more coarsely lobular, its consistence less regular, the veins are subcutaneous and dilated, and there are no enlarged glands

When the encapsulated tumour fluctuates, think of an intracanalicular epithelioma or of a galactocele

Galactocele appears with lactation or on weaning Pressure or puncture withdraws a milky fluid.

Dendritic epithelioma is a fluid, encapsulated tumour, composed of many small cysts under the nipple and in the centre of the gland Pressure causes exudation of a hæmorrhagic liquid When it has broken through the capsule and become an infiltrating epithelioma it grows like every epithelioma of the breast

(*B*) NON ENCAPSULATED TUMOURS —There may be a doubt between cancer or chronic mammitis Pain on pressure, absence of fixed retraction of the nipple *possible* adhesion to the surface of the skin, but without infiltration into the deep parts, the slow progress and the inflammatory character of the glands, are in favour of mastitis If in doubt, make a biopsy, but never wait for a decision On principle, in a woman forty years of age or more, an isolated nodule of mastitis is nearly always a cancer, in this case, never institute expectant treatment without making a biopsy, for treatment ought to be early

(*C*) ULCERATING TUMOUR —Think of an ulcerating sarcoma, of an ulcerating epithelioma, of tuberculosis of the mamma (fistula), or of an open syphilitic gumma

Sarcomatous ulceration is produced by mechanical erosion, and not by invasion of the skin *The skin is separated from the subjacent tumour* The neoplastic vegetations protrude externally without being adherent to the skin The remainder of the tumour has a sarcomatous appearance

Cancerous ulceration *presents* regular indurated, *everted*, infiltrated, non retracted edges the ulceration bleeds, its base is covered by sanious, cancerous vegetations

Tuberculous ulceration does not rest on a distinct tumour, but it is the termination of a fistula which leads from the deep mammary lesions The ulceration presents the characters of tuberculous ulcers

Ulceration due to the opening of a *syphilitic gumma* shows thick, agglutinated edges, violet in tint or of the colour of ham, the base is sloughing

The clinical diagnosis of each variety of cancer is easily made *ordinary scirrhus, atrophic* scirrhus scirrhus *en cuirasse,* encephaloid scirrhus carcinomatous mastitis may be taken for a phlegmon of the mamma

Biopsy is the surest element in the *diagnosis and in the prognosis,* it should be made in every case

TREATMENT —Circumscribed adenoma should be treated by simple enucleation multiple adenomata by mammectomy—*i.e* , by complete removal of the gland adeno-sarcoma by amputation of the breast without removal of the glands, and by radiotherapy In all cases of chronic mammitis and of adenoma look for chronic intestinal stasis, which is often the cause of the *mammitis* Medical or surgical treatment of the stasis can remove the mammitis

Every cancer ought to be treated at once If the diagnosis be doubtful, make a biopsy never rely on the course or on the clinical examination for a diagnosis or for making a decision Every commencing cancer should be extensively removed * An application of deep radiotherapy for two hours eight days before, and one of two hours three weeks later, is very useful, the appearance of

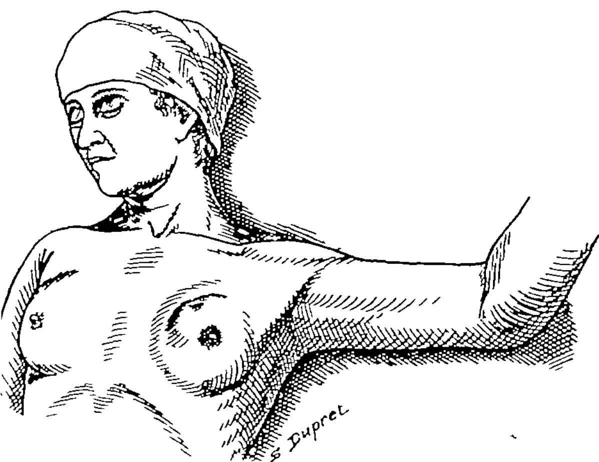


FIG 34.—CANCER OF THE BREAST AMPUTATION
Position of the patient. Rubber cap on the hair. Arm in abduction, forearm flexed.

erythema is the sign of sufficient treatment by X rays In cases of supraclavicular adenopathy, only use deep radiotherapy

Amputation is useless in the following conditions

(a) Patients with signs of generalisation in the bones and in the viscera

(b) Carcinomatous mastitis

(c) Scirrhus *en cuirasse*

* Radiotherapy ought to be combined with surgical treatment The application of the X rays is a question which progresses so rapidly that I dare not formulate any rules at the present time.—V P

Common ordinary scirrhus should be treated at the same time by deep radiotherapy and extensive removal, according to this principle Remove (a) the entire breast (gland and skin), (b) the pectorals, (c) the cellulo-glandular tissue of the axilla, and often the supraclavicular with the conjunctival layers surrounding it

Perform the operation so that the breast, the skin, the pectorals, glands, and cellular tissue of the axilla are removed *en bloc*

Cancer of the breast is serious recurrence may be observed

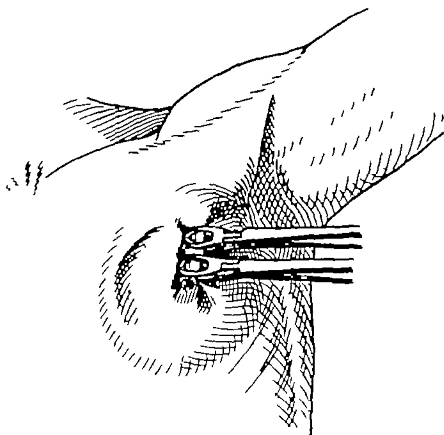


Fig 35 —Cancer of the Breast Amputation

The breast is seized by two tissue forceps this permits the skin to be made tense, and facilitates the incision.

after five or ten years The opinion of surgeons varies as far as final results are concerned Some speak of 40 per cent permanent cures others do not reach half these figures

The early diagnosis, assisted by biopsy extensive operations, and the combined action of operation and deep radiotherapy, should still more improve the prognosis

Anæsthesia should be regional, spinal or general *

* "Anesthésie régionale," *loc. cit.*

FIG 36.—CANCER OF THE BREAST AMPUTATION

The skin is made tense by the tissue forceps. The operator makes an incision as far from the tumour as possible one or two fingers breadth below the clavicle and follows the groove between the deltoid and the pectoral muscles.

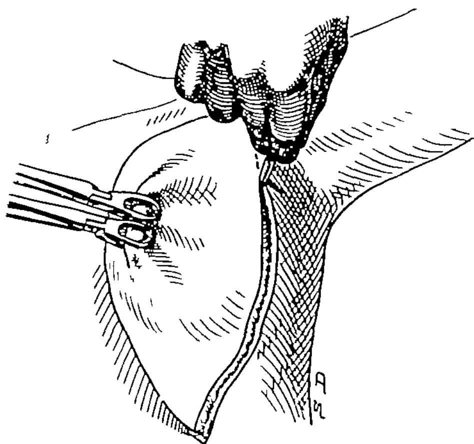


FIG 37 —CANCER OF THE BREAST AMPUTATION

The skin being tightly drawn owing to the tissue forceps, the operator makes a posterior incision, which joins the first at the root of the arm.

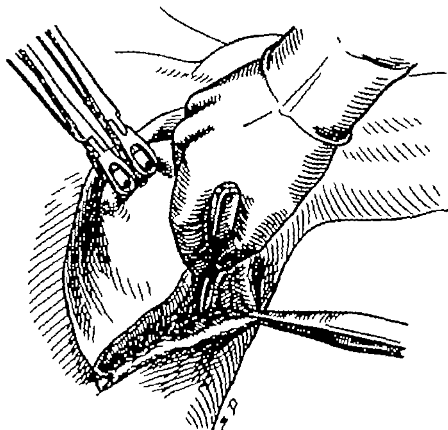


FIG 38.—CANCER OF THE BREAST AMPUTATION

The operator begins to mobilise the posterior lip of the incision, then separates the skin and the fat from the deep layers. He *leaves a sufficient quantity of subcutaneous fat for the skin to be well nourished,* but is careful not to remove the tissues which are part of the mammary gland.

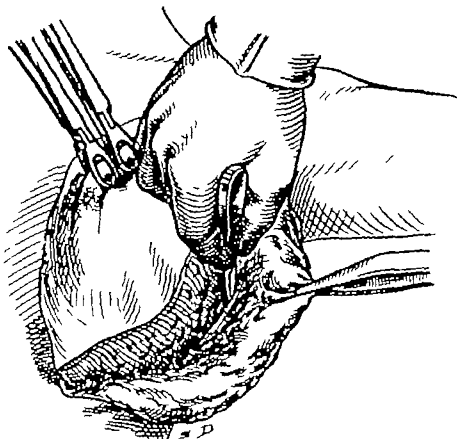


FIG 39.—CANCER OF THE BREAST AMPUTATION

Freeing the posterior cutaneous flap uncovers the anterior border of the latissimus dorsi: the liberation of the cutaneous and adipose flap ought *generally to stop there.*

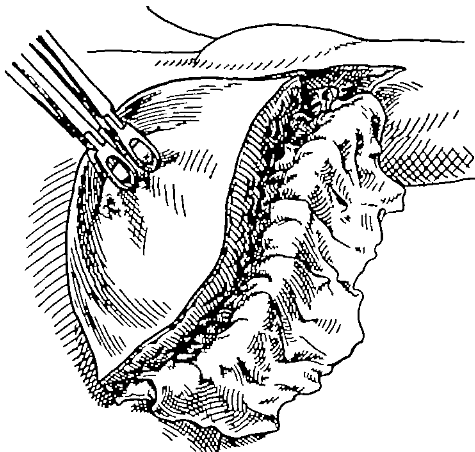


FIG 40 —CANCER OF THE BREAST AMPUTATION

The operator does not apply forceps to the bleeding vessels, but uses an abdominal compress. The small vessels stop bleeding

FIG. 41 —CANCER OF THE BREAST AMPUTATION

Freeing the anterior flap of cutaneous and adipose tissue the liberation extends up to the clavicle and to the sternum so as to expose clearly the insertions of the pectoralis major.

FIG 42.—CANCER OF THE BREAST AMPUTATION

Before separating the pectoralis major the operator lays bare its insertions and separat[es] them from the fatty tissue of the breast for some centimetres.

FIG 43.—CANCER OF THE BREAST AMPUTATION

Liberation of the tendon of the pectoralis major close to the humerus.

Fig 44.—Cancer of the Breast Amputation

The tendon of the pectoralis major is divided close to the humerus over a curved clamp.

Fig 45.—Cancer of the Breast. Amputation

The separation of the pectoralis major from its insertion is continued close to the clavicle.

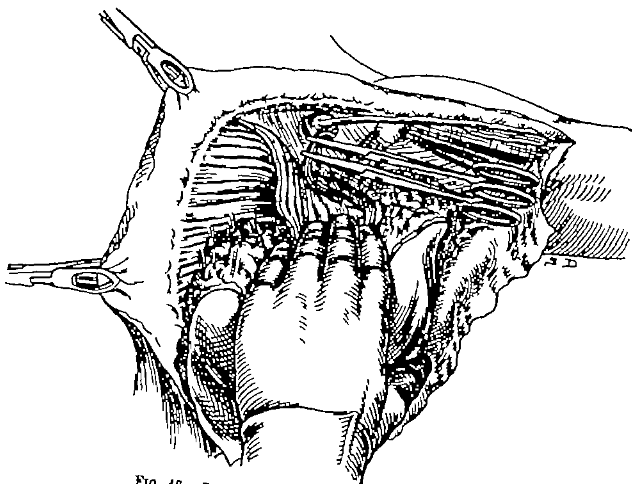


FIG 46 — CANCER OF THE BREAST AMPUTATION

Owing to the division of the tendon of the pectoralis major and the separation of the muscle from the clavicle, the surgeon can expose the subclavicular space, the coracoid process and the coraco-clavicular and axillary aponeurosis, which must be removed. Hemostasis of the acromio-thoracic vessels.

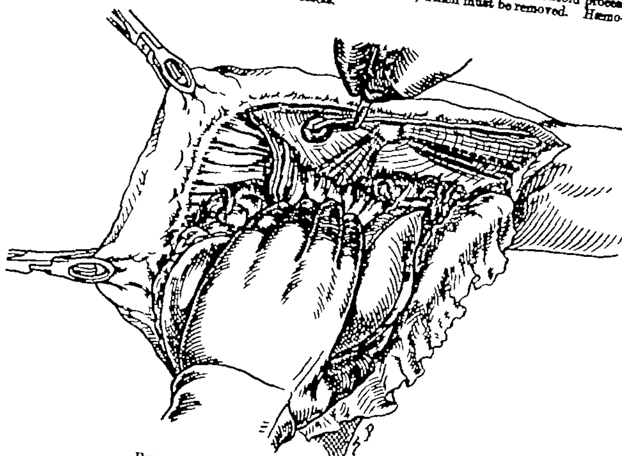


FIG 47 — CANCER OF THE BREAST AMPUTATION

Separation of the coraco-clavicular and axillary aponeurosis. This aponeurosis ought to be entirely removed with the pectoralis minor from the internal extremity of the clavicle up to the upper extremity of the arm.

Fig 48.—Cancer of the Breast Amputation

The coraco-clavicular and axillary aponeurosis has been divided as well as the pectoralis minor The dotted line indicates the internal part of this aponeurosis, which, in its turn, ought to be divided.

Fig 49 —Cancer of the Breast Amputation

The coraco-clavicular and axillary aponeurosis and the pectoralis minor separated and mobilised, are held in the operator's left hand; the right hand has cut the attachment with a knife, then the liberation of the structures is continued with a compress on forceps: here the glandular mass adheres to the axillary vein, which will have to be removed.

Fig 50 —Cancer of the Breast Amputation

Bleeding from every vessel, giving trouble to the operator ought to be stopped before being cut to avoid the field of operation being swamped. Generally the glandular mass is not attached to the vessels; it is easy to liberate it with the compress.

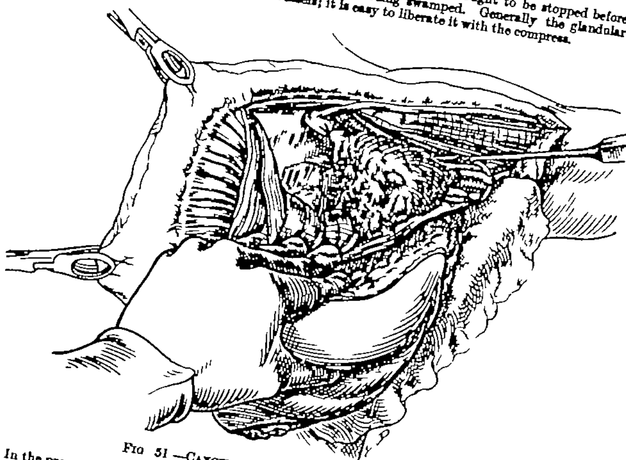


Fig 51 —Cancer of the Breast Amputation

In the present case the axillary artery is not adherent to the glandular mass, but the vein is embedded in the mass the operator has to tie it as well as the two brachial branches which form it Once the venous trunks have been divided between two ligatures and the glandular mass freed, the knife and the compress separate the mass from the plexus of vessels and nerves.

FIG 52 —CANCER OF THE BREAST AMPUTATION

The glandular mass separated from the bundle of nerves and vessels the operator detaches the sternal insertions of the pectoralis major

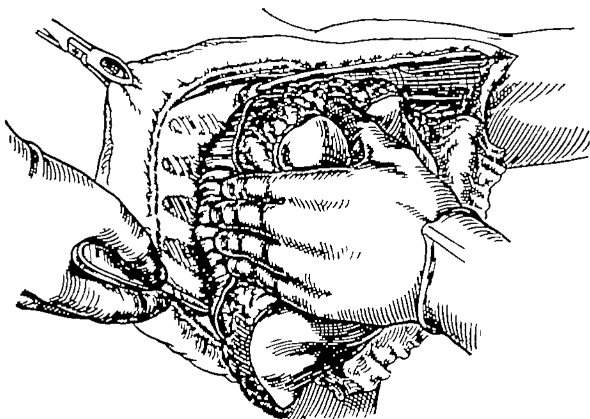


FIG 53.—CANCER OF THE BREAST AMPUTATION

The knife separates the costal insertions of the pectoralis major

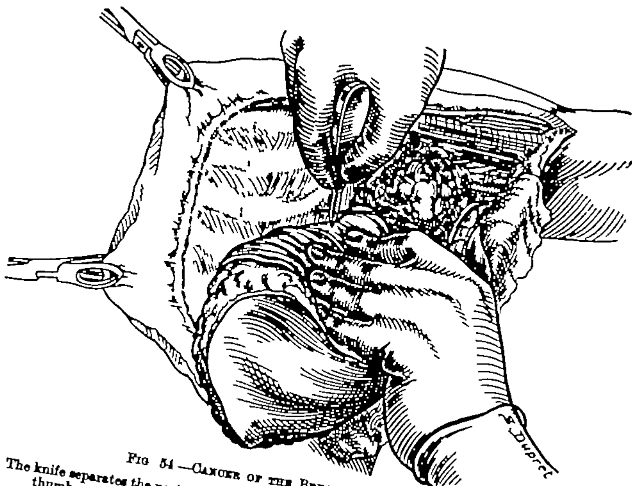


Fig 54 —Cancer of the Breast Amputation

The knife separates the pectoralis minor under the left hand of the operator between the thumb and the index finger; the reader perceives the intercostal nerve which has to be divided and the glandular mass detached, after partial resection of the veins.

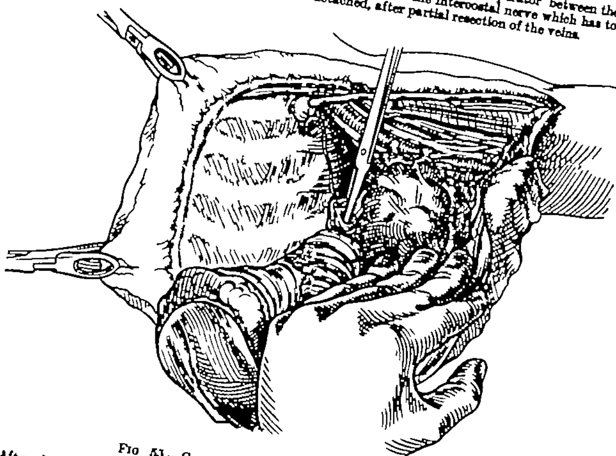


Fig 53 —Cancer of the Breast Amputation

After thoracic dissection of the pectoralis major has been completed, the operator has detached the glandular mass from the axillary artery and the nerves. This liberation is made by the compress. It is the compress, also, which separates the cellulo-glandular mass from the thoracic walls and from the subscapular fossa.

Fig 56.—Cancer of the Breast Amputation

The glandular mass is separated from the subscapular fossa by the compress. This procedure prevents any nerve being injured.

Fig 57 —Cancer of the Breast Amputation

Emptying the subscapular fossa: the nerves to the serratus magnus to the teres major to the latissimus dorsi, and the subscapular nerves are spared. Only the intercostal fillets and some veins are removed.

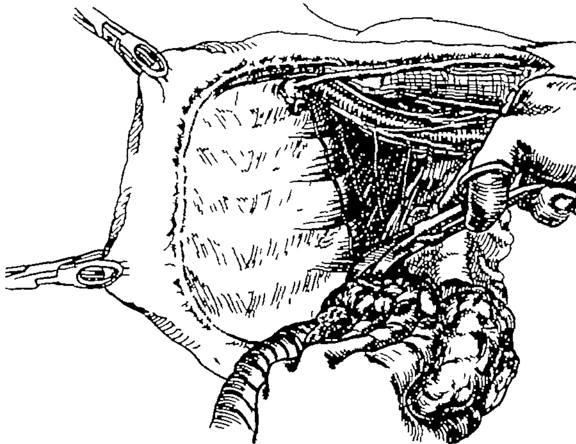


FIG 58.—CANCER OF THE BREAST AMPUTATION

The mass is only held by some fibrous tracts, which must be divided by scissors. Note th ligature of the veins which have to be partly resected and the parts of which ar removed with the glandular mass.

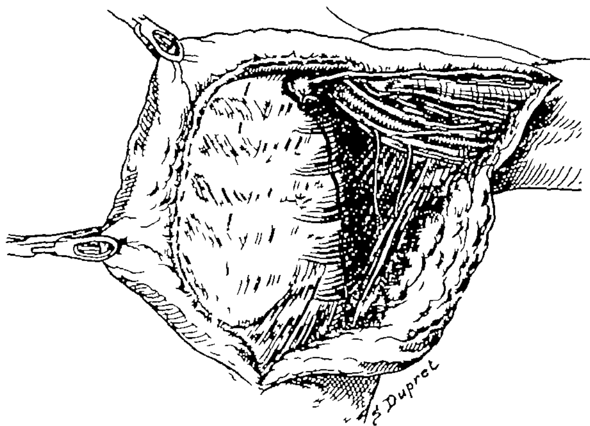


FIG 59.—CANCER OF THE BREAST AMPUTATION

Appearance of the axilla after treatment of the cellular tissue and glands. These drawings, as all the others, were made during the operation.

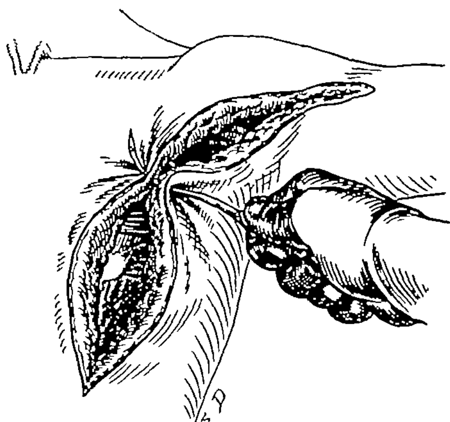


Fig 60 —Cancer of the Breast Amputation

Closure of the wound some silkworm gut sutures bring the cutaneous flaps into apposition.

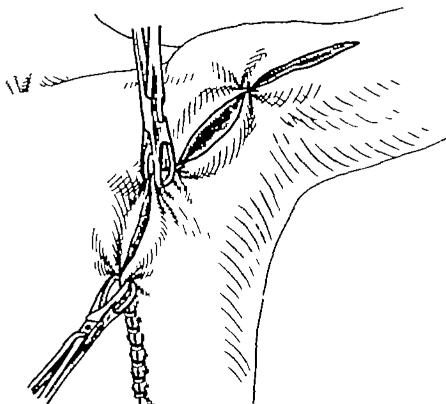


Fig. 61 —Cancer of the Breast Amputation

Note the position of the tissue forceps, which, drawing on their respective sides, bring the edges of the skin into apposition.

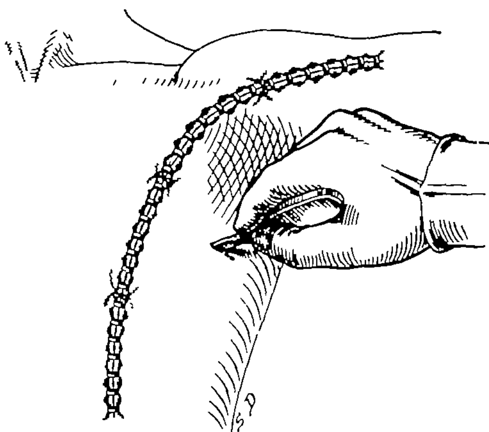


Fig 62.—Cancer of the Breast Amputation
Counter-opening at the dependent point of the axillary wound.

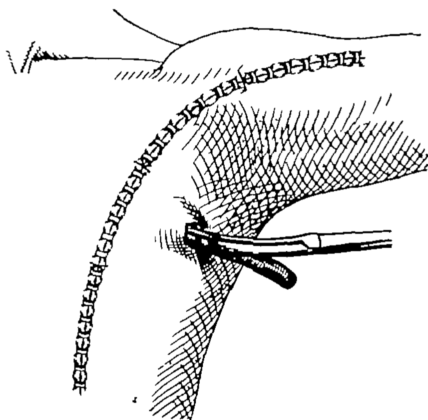


Fig 63.—Cancer of the Breast Amputation
Introduction of a drainage-tube.

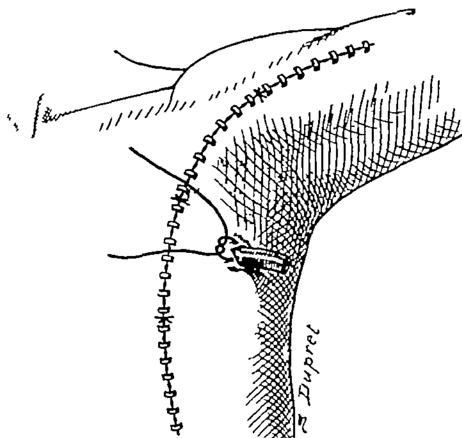


FIG 64.—CANCER OF THE BREAST. AMPUTATION
Fixation of the drainage-tube by silkworm gut.

III

DUODENAL ULCER

Marginal Gastro-Enterostomy

SURGICAL treatment of chronic duodenal ulcer is often justifiable The best treatment is exeresis but the usual treatment is posterior trans mesocolic gastro-enterostomy, with a short loop, iso-peristaltic Of 100 duodenal ulcers treated in this way, 70 were completely cured 30 per cent still complained of symptoms

On what do the therapeutic failures depend? The causes are as follows

(*A*) The patient on whom a gastro-enterostomy is being performed for ulcer suffers at the same time from another abdominal affection—calculous cholecystitis appendicitis or chronic intestinal stasis

The ulcer has been treated and not the other lesions, which have not been looked for either before or during the course of the laparotomy The gall bladder should regularly be examined during operations on the stomach and on the duodenum, if there be calculi, remove the gall bladder In order to perform this complementary operation on the gall bladder lateral separation of the abdominal wall* is required with an incision branching from the median one The removal of a gall bladder by the median incision may result in an incomplete or imperfect operation. This incision in L cicatrises very well. An examination must be made for an appendicitis or for cholecystitis before every operation for gastric or duodenal ulcer or for chronic intestinal stasis If the examination be in the affirmative remove the appendix during the operation Do not use the same median incision if the patient be fat or very muscular because the opening is too long and there is a chance of secondary eventration operation for such a condition requires too large an incision. If the patient be fat and very muscular it is better to make two separate incisions—a median and

* On principle the best abdominal incision for duodenal ulcer is the transverse incision, beginning on the right at the extremity of the tenth rib and passing the median line to be prolonged to the left, more or less, according to the case.



FIG 65.—MARGINAL GASTRO-ENTEROSTOMY FOR DUODENAL ULCER.

With one blow of the compress the operator has stripped the greater curvature from its vessels and from the omentum: the gastro-epiploic arteries are seen. At the two ends *forceps* obliterate the trunks to avoid hæmorrhage from the gastro-epiploic margin. A tampon liberates the superior layer of the transverse meso-colon. At the greater curvature the dotted line indicates the vessels torn by stripping with the compress. (TIXOIS)

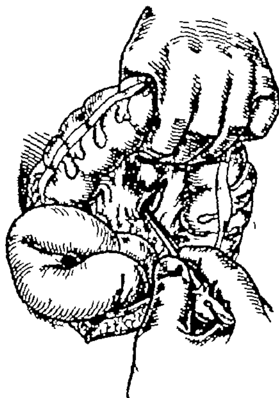


FIG 66.—MARGINAL GASTRO-ENTEROSTOMY FOR DUODENAL ULCER.

Opening the transverse meso-colon. The operator chooses an avascular space situated as near as possible to the stripped portion of the stomach. Generally this opening *corresponds to the largest part of the avascular circle*; however if the opening and the avascular space be not sufficiently large he should not hesitate to divide a meso-colic vessel between two ligatures, so that the anastomotic opening is not strangulated by the meso-colic orifice.

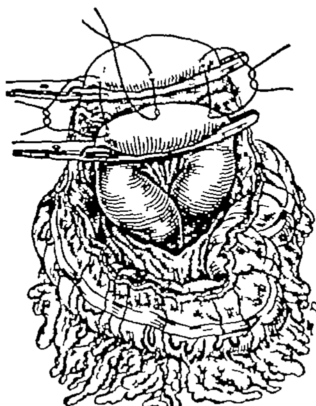


FIG. 67.—MARGINAL GASTRO-ENTEROSTOMY FOR DUODENAL ULCER.

The very short jejunal loop, as short as possible, has been brought through a sufficiently large meso-colic opening; clamps have been placed on the jejunum and on the stomach. Three fixation threads have been applied to fix the tissues. Note the respective situation of the three threads: the two extreme ones correspond exactly to the free border of the intestine and of the stomach the middle one encroaches slightly on the posterior surfaces the threads are of slowly absorbable catgut.

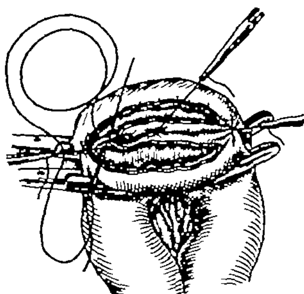


FIG. 68.—MARGINAL GASTRO-ENTEROSTOMY FOR DUODENAL ULCER.

Posterior sero-muscular continuous sutures the three fixation threads are the only sero-serous stitches the stomach and the jejunum have been incised to about 3 millimetres of the preceding threads. The sero-muscular surface is sutured with slowly absorbable catgut.

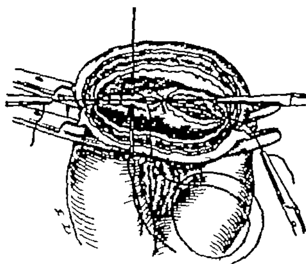


FIG 69.—MARGINAL GASTRO-ENTEROSTOMY FOR DUODENAL ULCER.

Stitches to the mucosa. *After* the sero-muscular continuous suture, the stomach and the jejunum are opened and the operator stitches the mucosa three interrupted fixation stitches have been applied; in the space between, a button hole stitch is made by a straight needle.

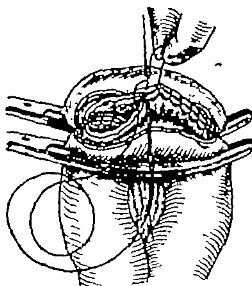


FIG 70.—MARGINAL GASTRO-ENTEROSTOMY FOR DUODENAL ULCER.

Anterior suture of the mucous surfaces. The mucosa only is brought into apposition by a button hole suture. It need not be Connel's stitch (Vol. V.)

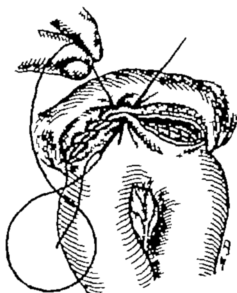


FIG 71.—MARGINAL GASTRO-ENTEROSTOMY FOR DUODENAL ULCER.

Anterior sero-muscular continuous suture. Here no fixation stitch has been applied in the middle of the suture, but it is preferable to employ it. It need not be Connel's stitch (see Vol. V.).

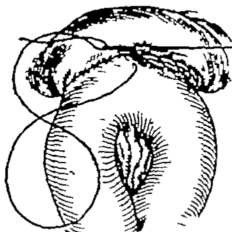


FIG. 72.—MARGINAL GASTRO-ENTEROSTOMY FOR DUODENAL ULCER.

Anterior stitches of the serous surfaces. Cushing's stitch. The needle penetrates into the stomach, then into the jejunum, parallel to the line of suture. Slowly absorbable catgut is used



FIG 73.—MARGINAL GASTRO ENTEROSTOMY FOR DUODENAL ULCER.

Suture of the meso-colic opening The meso-colon is sutured to the stomach by four interrupted sutures. Note the meso-colic opening is large and does not in any way strangulate the gastro-jejunal anastomosis this detail is indispensable even at the risk of dividing a meso-colic vessel to enlarge the opening

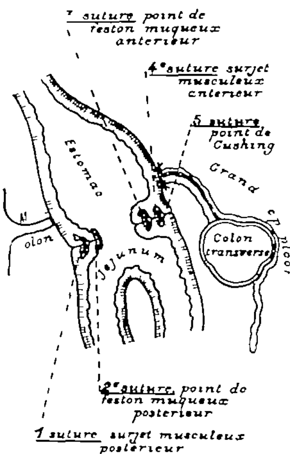


FIG 74.—MARGINAL GASTRO ENTEROSTOMY FOR DUODENAL ULCER.

Diagram showing the technique followed to perform marginal gastro-enterostomy

3e suture point de feston muqueux antérieur—3rd suture anterior buttonhole stitch to the mucosa. *4 suture surjet musculeux antérieur*—4th suture anterior muscular continuous suture. *5e suture point de Cushing*—5th suture Cushing stitch. *Méso-côlon*—Meso-colon. *Estomac*—Stomach. *Grand épiploon*—Great omentum. *Côlon transverse*—Transverse colon *Jéjunum*—Jejunum. *1 suture surjet musculeux postérieur*—1st suture posterior muscular continuous suture *2e suture point de feston muqueux postérieur*—2nd suture posterior buttonhole stitch to the mucosa

IV

SURGERY OF THE BILIARY PASSAGES

Cholecystitis

CHOLECYSTITIS may be calculous or catarrhal, the former is the more common

(*A*) Non-calculous or catarrhal cholecystitis assumes two forms

(*a*) *A gall-bladder with normal walls—i.e*, bluish, thin, supple, but distended and containing a large quantity (100 grammes for example) of bile rich in *Bacilli coli* exhaling a stale or fœtid odour

(*b*) *A thickened gall-bladder*, adherent, containing blackish bile of the consistence of tar In the two forms the lymphatic glands which follow the common bile-duct are increased in size

Cholecystitis without a stone is accompanied by continual sensitiveness in the region of the gall bladder Usually there are no painful attacks (hepatic colic or gastralgia '), but the patient complains of slight general symptoms slight fever (37 6°, 37 8°), continuous malaise, and general exhaustion, phenomena explainable by slight chronic toxæmia respiration is feebler at the base of the right lung One of the commonest varieties is what Maccarty calls 'strawberry gall bladder, in which the congested mucosa has the appearance of a ripe strawberry and may conceal minute concretions

A surgeon exposes a gall bladder, which appears to correspond to this description, he does not find a calculus, he ought to explore with care the common bile-duct to see if a stone has not been impacted in it Afterwards he should examine the duodenum, which may be the seat of an ulcer Radioscopy, prior to the operation will reveal to him the presence or not of chronic intestinal stasis, and of dilatation of the duodenum This is the usual cause of catarrhal cholecystitis But the functional results are not as good as after removal of a calculous gall bladder If the intestine and the stomach be normal the gall bladder should be removed If intestinal stasis exist, operation should be performed on the intestine short-circuit pexy plication or resection

(*B*) **Calculous Cholecystitis** —Gall stones are more *frequent in* women than in men (three to one), this predominance is still more *marked if the* women have had children 98 per cent of the women *affected* with gall-stones have been pregnant The cause of gall stones is infection, it is most often of intestinal origin, and is *frequently accompanied by cholesterinæmia*

Normally, the liver exercises a bactericidal action on the bacilli in the blood If the patient be affected with chronic intestinal stasis, the coli bacillus is absorbed in great numbers by the portal vein, and then eliminated by the biliary ducts The bile then swarms with *Bacilli coli* and descends to the duodenum by the ducts, whilst passing through the gall bladder it stagnates, and produces slight inflammation, the stone is formed by precipitation of the biliary salts When the calculi are found in the common bile-duct they have always originated from the gall bladder The favourite site is the pelvis *

Why *does not* an *infected* gall bladder with *purulent contents* more often produce acute general symptoms? Why, on the con trary does toxic lithiasis of the common bile-duct give rise to septic complications? Because the gall bladder possesses a poor lymphatic system and the duct is rich in lymphatics

The wall of the gall bladder is poor in lymphatic vessels and absorbs few toxins and microbes nay, more formed especially of elastic tissue its walls *easily yield to distension from hypersecretion of septic matters and this distension blocks the lymphatics* and hinders absorption

On the contrary when the stones obstruct the common bile-duct, they prevent the passage of the bile which becomes infected and then absorbed by the numerous lymphatics, and acute symptoms supervene The temperature is raised (39°, 40°), and shivering, oliguria pain and often jaundice are observed

Calculus of the common bile-duct is not necessarily accom *panied by jaundice it is absent in 30 per cent* of cases

SYMPTOMS OF CHOLECYSTITIS —Can a person live and be in good health with gall stones and can they exist without the person's knowledge?

Tolerance of some gall bladders for stone was formerly a patho-

* French *bassinet* the name given by Broca to the swelling on the right side of the neck, separated by a ridge from the body of the gall bladder above, and from the cystic duct below The word "pelvis" will be retained throughout the text —*Translator*

logical dogma Often, moreover, stones are only recognised at autopsy, or during a laparotomy for operation unconnected with the biliary passages But because gall stones have not been clinically diagnosed the conclusion must not be drawn that they cause no symptoms and are not a permanent danger to the individual From this belief in the harmlessness of gall stones, and from the false security so engendered, it would be easy to conclude that no treatment was necessary Older clinicians only diagnosed gall stones if complications occurred infection, jaundice, pain swelling in the right hypochondrium, etc At the present time the shadows which surrounded the clinical manifestations of biliary lithiasis have been partly dissipated by the light of frequent laparotomies and of exploratory operations

The experiments of Crile often permit of the diagnosis of lesions of the gall bladder by tubage of the duodenum

In the near future I hope the X rays with the assistance or not of insufflation of the peritoneum, will be as trustworthy as in renal calculus

On the day when doctors and patients see the gall stones, operation will be regularly performed The observations of Henri Béclere and of the American radiologists give us this hope

Formerly, anatomo-pathologists stated gall-stones existed in 10 per cent of human beings, this proportion is much exaggerated Men above fifty years of age are affected in the proportion of 2 per cent , and women 5 per cent

The use of the words latent cholecystitis —i.e absence of symptoms—is erroneous, it signifies unrecognised biliary calculus again a diagnosis not made means a clinical error, and not absence of symptoms The surgeon who finds stones in the gall bladder in a patient operated upon for fibroma, ulcer of the stomach or for appendicitis ought to question the patient with care during convalescence and from his past history will obtain the pathological picture corresponding to calculus

The classical manifestation of gall stones is hepatic colic The attack shows itself by acute pain in the epigastrium, radiating to the right shoulder to the back and to the right—rarely to the left—hypochondrium or to the umbilicus The attack ends abruptly and is usually accompanied by eructations or vomiting of bile or of food If after the attack, the pain or sensitiveness persist on abdominal palpation this is an indication that the walls of the gall bladder are inflamed It is not the case that all cases of gall stones

are accompanied by marked and classical hepatic colic Most often the patient complains of gastric symptoms and of 'indigestion They appear two or three hours after meals, are not alleviated by pressure or by food, and occur irregularly Reflex dyspepsias with calculous cholecystitis—*i.e*, cases of calculus without hepatic colic—are *most often accompanied with sensitiveness* either on palpating the gall bladder or during deep inspiration.

On auscultation, respiration at the base of the right lung is feeble Because of these gastric symptoms the majority of cases of gall stones are labelled dyspepsia, neurasthenia, gastralgia, hyperacidity, etc , there is generally no reference to calculus of the gall bladder

COMPLICATIONS OF CHOLECYSTITIS —(a) *Pancreatitis* —This is a frequent complication of lithiasis of the biliary passages, and compels us to speak of the physiological rôle of the gall bladder Is it a biliary reservoir, like the bladder for the urine ? No Man secretes as much bile as urine (about 1,300 grammes a day), but compare the size of the bladder to that of the gall bladder, and it will be seen there is no resemblance in the parts they play Does the gall bladder play the rôle of a contracting organ, is it an aspirating and contractile pump regulating the course of the bile ? No Histology shows its poorness in muscular fibres, it is then impossible to attribute to it a contractile rôle The gall bladder is made especially of elastic tissue, like the lung, the elasticity plays a functional part, and acts as a safeguard to the pancreas in cases of biliary obstruction situated in the duodenum

If pure bile be injected, in animals, into the pancreatic duct, an acute and fatal pancreatitis supervenes But suppose the ampulla of Vater is obstructed by a calculus owing to the obstacle *in the duodenum the bile tends to flow into the* pancreatic duct Acute necrosis of the gland ought to occur but, thanks to the presence of the gall bladder and to its elasticity, the tension in the biliary passages finds in the reservoir a safety valve The bile, under pressure, flows back into the gall bladder instead of invading the pancreatic duct

Independently of this mechanical rôle, the gall bladder plays, by secreting mucus a chemical part which assists also in the defence of the pancreas In cases of obstruction at the termination of the biliary passages the defensive role of the mucus is proved by this experiment if *pure bile be injected in animals* into the pancreatic duct, an acute pancreatitis is produced but if a mixture of bile

and mucus from the gall bladder be injected, acute inflammation is averted, and a chronic and mild irritation occurs instead William Mayo compares the ampulla of Vater to the carburettor of a motor when exploded if the warm gas flow back to the carburettor, look out for the motor being burnt! If the bile be not discharged freely into the duodenum, if it regurgitate into the biliary and pancreatic ducts, there is a risk of burning' the pancreas or the liver The defensive rôle exercised by the elastic walls of the bladder is proved by this fact when a surgeon operates again on a patient for gastric symptoms following incomplete removal of the gall bladder performed some years before, he finds the gall bladder is partly regenerated from the stump of the cystic duct Ligature has been by mistake applied to the pelvis and not on the cystic duct Under the influence of intracanalicular pressure the microscopic gall bladder represented by the stump has distended, and has reproduced a true gall bladder which safeguards the pancreas

Courvoisier had formerly observed that 84 per cent of cases of gall-stones of the common duct were accompanied by a contracted, atrophied gall bladder

Pancreatitis is a common affection during biliary lithiasis (7 per cent of patients affected with calculi of the gall bladder, and 27 per cent in cases of stone in the ductus choledochus—Mayo) The pancreatic complications are, then, four times more frequent in cases of stone of the choledochus than in cases of stones in the gall bladder

Admitting the functional role of the gall bladder on the pancreas, possibly then the surgeon ought to respect it in the few cases where it is apparently healthy, notwithstanding the presence of calculi.

(b) *Cardio-Vascular Symptoms* —Biliary symptoms often cause reflex circulatory disorders, extra systoles signs of angina, etc , each attack is accompanied by increase of cardiac symptoms Endocarditis is observed in cases of infection it may end in an organic valvular lesion. The myocardium is often feeble, and bears narcosis badly Regional or spinal anæsthesia is necessary * Most often the symptoms disappear after removal of the gall bladder or after drainage of the hepatic duct

(c) *Cancer of the biliary passages* complicates calculus in 2 per cent of cases the gall bladder is nearly normal in appearance but

* Anesthésie régionale," Pauchet, Sourdat and Labat. Edited by Doin. 3rd edition.

conceals some warty vegetations, or it appears thickened, whitish, and cartilaginous in places, the tissue of the liver is often invaded After resection of cancerous cholecystitis the patient lives scarcely more than a year, however, in cases of cancer of the gall bladder removed in the early stage, not perceptible macroscopically, and diagnosed by means of the microscope prolonged survival may be observed

(*d*) *Perforation* —The gall bladder may open into the peritoneum and produce peritonitis It may and frequently does discharge the stones into the digestive tract stomach, duodenum, or colon The removal of large or numerous calculi in the motions is the result of perforation Cure can thus be brought about, but often also the gall bladder is incompletely emptied, a fistula between the gall bladder and the intestine, with chronic infection, persists Perforation, followed also by spontaneous evacuation of stones, causes risk to the patient, not, however, more than by elimination by the common bile-duct, which threatens to bring in its train retention of bile from jamming of the stone in the ductus choledochus

DIAGNOSIS —It is not always possible to make a diagnosis of disease of the gall bladder we have opened the abdomen, for disease of the stomach, and have found cholecystitis inversely we have looked for a gall stone and found a normal, bluish, thin gall bladder but at the side of it an unknown duodenal ulcer Radiography at the present time seldom reveals a calculus, but duodenal tubage may furnish useful information As a result of experimenting with sulphate of magnesium Crile has noted the following

(*a*) In certain cases of cholelithiasis the gastric contents contain bile, if the liquid be clear, do not necessarily conclude the gall bladder is normal, in half the cases of cholecystitis the gastric acidity is normal The gastric contents are normally clear or feebly tinged with bile Thick liquid coming from the duodenum signifies nothing if the turbidity be intermittent, or if, on microscopic examination it contain gastric cells When the duodenal secretion is constantly thick and alkaline but does not contain pus cells, inflammation of the duodenum or of the biliary passages ought to be suspected.

(*b*) The first bile collected after the administration of sulphate of magnesium comes, principally, from the common bile-duct (stage of the choledochus) and is clear yellow in colour

(*c*) *After the first discharge the bile becomes darker and more*

viscid, and comes from the gall bladder, if there be no discharge, we can conclude the cystic duct is obstructed by adhesions, or by a calculus, in cholelithiasis when the cystic duct is obliterated, the bile of the gall bladder is more viscous, thicker, and contains pus cells

If the gall bladder be full of stones, there is no discharge of bile from the gall bladder, but if there be an infection of the gall-bladder the bile contains pus cells

Of ninety three cases where Crile has made this test he has operated on thirty cases, and these thirty gave results in conformity with his prognostications

TREATMENT OF CHOLECYSTITIS —Should all infected gall bladders be removed as a chronic appendix, when the diagnosis is clear?

Should all cases of gall stones be operated upon when recognised or suspected, as urinary calculi?

To these two questions I answer Yes Why not regularly remove stones in the gall bladder seeing that physicians and surgeons acquiesce in the removal of calculi from the pelvis, from the kidney, and from the bladder? Removal of a gall stone without complications gives a very slight mortality (0·5 per cent) the danger can be said to be next to nil Early operation is less serious than if the disease be left to take spontaneous action the discharge by the natural passages is one of the complications to be feared and not a method to be desired, because the stone may stop in the common bile-duct and produce retention of bile, the operation becomes more serious merely of consequence if the patient be pale but serious if he be jaundiced

The old form of treatment attempted to obtain discharge of the stones into the common bile-duct, but this is the worst eventuality which can occur Medical treatment a Vichy cure and uraseptin are certainly very useful but simply for the purpose of disinfecting the biliary passages and of preventing attacks of angio-cholecystitis

Retention of bile is a fatal complication if it persist, but so long as there are calculi in the gall bladder obstruction of the common bile-duct is a possible termination

MEDICAL TREATMENT OF CHOLECYSTITIS —No drugs can dissolve the stones or can hardly assist in their expulsion Moreover, as I have just said, this attempt at forced elimination is the worst eventuality be it by the common bile-duct or by perforation of the gall bladder

The only aim of the doctor should be to prevent infection angio cholitis, and inflammation of the gall bladder. He should endeavour to do this by preventing constipation and dyspepsia by exciting the secretion of bile and washing out the intracanalicular germs, by combining the action of mineral or vegetable oil, by uraseptine, by bile preparations, and by a Vichy cure etc. The regular evacuation of the colon and disinfection of the biliary passages which act like Contrexéville, Evian and Vittel waters in urinary affections, can reduce the stones in the gall bladder to a state of quiescence. I am a strong believer in recommending their removal before any complication occurs, after the second attack of cholecystitis, because the operation is almost harmless, in addition, the patient operated upon ought to continue to keep a watch over his liver and over his intestine, *since the coli bacilli are still* perhaps being drawn into the portal vein, since angio-cholecystitis and cholesterinæmia which were the origin of the formation of the calculi, still exist, and since the liver, and perhaps the pancreas and the kidney, remain for some time sluggish.

But some doctors like Micawber, say, since the patients have to be treated medically, even after operation, why operate? Because the surgeon attends only to one of the symptoms of the disease—namely the calculus—which threatens life or health. Every disease is a morbid condition, and not an accident. Calculus is the result of angio-cholitis of cholesterinæmia or of a chronic perceptible or latent digestive disorder.

The smallest danger in a case of biliary calculus is early operation which, *in spite of its extreme mildness, requires, I consider,* that the patient operated upon be treated medically afterwards and watched like every case of gastro-enteropathy.

This preventive treatment will ward off other possible digestive hepatic, or general complications.

SURGICAL TREATMENT.—I have no statistics to answer the question, what is the seriousness of the operation for the different positions of gall stones, but if I made a digest of the facts collected from my colleagues and from reading published works, and from my own experience, I should say the following is the percentage which seems to me to be nearest the truth.

Type A.—Cholecystectomy or cholecystotomy *for calculus of the* gall bladder only, without jaundice mortality 0·5 per cent.

Type B.—*Choledocotomy for calculus of the* common bile-duct, without jaundice mortality, 5 per cent.

Type C —Choledocotomy for calculus of the ductus choledochus with recent jaundice, liver not protruding, and pulse 55 60 mortality, 20 per cent

Type D —Choledocotomy for calculus of the ductus choledochus, with deep jaundice brownish or olive-coloured, rapid pulse mortality, 80 per cent

Until such time as the harmfulness of so-called latent lithiasis is recognised, the harmlessness of early operation, performed for calculi which give little or no trouble, is generally accepted and until the X rays show the presence of gall stones as distinctly and as constantly as renal calculi, our colleagues will be divided into two camps

The firm abstentionists who say

Only operate on gall stones if they produce one or some of the following complications fever, pain, tumour, gastric disorders, acute attacks etc

The systematic interventionists, who say

Operate at the beginning as soon as the diagnosis is made, or at least after the second attack of cholecystitis, before there are any complications jaundice or infection of the biliary ducts, or of the gall bladder

The first propose an extensive intervention, and let the patient run the risk, before an operation of a complication The second propose a small operation to ward off any complication

Cholecystectomy or Cholecystotomy ?—The former should be performed—

(a) If there has been an acute attack of cholecystitis

(b) If there be a stone in the cystic duct or in the pelvis at the time of operation

(c) If the cystic duct be hard and thick

(d) If the wall of the gall bladder be white and thick

Cholecystotomy should be performed if the patient has never had an acute attack of cholecystitis, and if the gall bladder be normal in appearance the ideal cystotomy can then be performed open the gall bladder empty and suture it to the abdominal wall, and close without drainage

But why not remove the gall bladder although normal in appearance, since its ablation is not incompatible with a normal life ? A diseased or suspected gall bladder should be removed, but a healthy one preserved Experience has moreover, shown that after the removal of the gall bladder or when it is functionally

suppressed by cholelithiasis, the ductus choledochus is often dilated, and this compensatory dilatation has the purpose of storing up the bile The common bile-duct acts as a reservoir instead of and in place of the gall bladder Directly the latter is removed the ductus choledochus dilates a second time, and this dilatation favours the production of new stones Again, it is more difficult to operate on a patient affected with stone in the common duct when the gall bladder has already been removed especially when there are adhesions Hence, if the gall bladder be healthy it is wise to preserve it

TECHNIQUE OF SIMPLE CHOLECYSTECTOMY—*The Assistants* — Two assistants should be stationed on the left, opposite the operator on the right side One assistant directly helps the operator, and the other, near the head, should hold the liver when it has been brought outside Surgeon and assistants should wear rubber gloves, with a pair of cotton gloves (Villard) over them, to avoid tearing the liver

If the assistant wear Chaput s gloves he should seize the liver with two compresses, so as not to tear it

Anæsthesia *—Spinal, paravertebral, or local, with anæsthesia of the splanchnic nerves

Disinfection of the Skin —Villard (of Lyons) rubs with benzene, then ether, then tincture of iodine the effect of which is more active on a clean skin

Position —Pillet s movable cushion, which can be regulated at will

Mark off the operative field by four towels fixed by forceps to the skin and forming a quadrilateral, bounded above by the right costal margin, below by the anterior superior iliac spine, and internally by the middle line

Incision —I employ a right oblique paracostal incision, one thumb s breadth below the costal border and very long Villard makes an angular incision as for choledocotomy, its upper part is oblique, parallel to the right costal border the second part vertical, along the external border of the rectus If the calculus be entirely in the gall bladder, the internal part of the oblique portion can be dispensed with so as not to cut the internal mammary vessels, but if there be not sufficient space it is necessary to cut up to the xiphoid cartilage

This incision, which begins at the xiphoid and ends at the umbilicus, appears mutilating but later examination of patients operated upon shows no signs of eventration

* Anesthésie régionale, *loc. cit.*

Division of the Aponeurosis and of the Muscles.—In cases where the incision is angular, begin at the oblique part, cutting the rectus, and continue by the vertical portion, at the external border of the muscle

Hæmostasis.—Stop all bleeding immediately, completely and permanently, with catgut 0

Opening the Peritoneum.—Open the peritoneum in the vertical part of the incision Place two tissue forceps on the borders of the peritoneal incision, and follow by its transparency the direction of the scissors, so as to cut the peritoneum exactly at equal distance from the borders of the musculo-aponeurotic section By this means the incision is quite regular

Division of the Falciform Ligament (Villard) between two forceps The portion holding the liver acts as a tractor, and is to be entrusted to the assistant

Exteriorisation of the Liver (Villard).—Seize the right lobe of the liver, behind and at the right, and then gently deliver it outside The assistant, near the head, passing his hands up the thorax, seizes the liver with two compresses or cotton gloves, and holds it turned over on the right costal margin. The direction of the liver is thus oblique as the incision, its lower surface looks towards the patient's left thigh When there is no ptosis, evisceration of the liver is impossible, the operation is then more difficult

Protection of the Abdomen.—Introduce some abdominal compresses into the lower part of the abdomen to keep the intestines in position Place two compresses in the lumbar fossa below the posterior border of the liver so as to support the gland below and behind and lessen the work of the assistant who draws on the organ

Open the Wound with Gosset's or Dartigues Retractor.—The space is considerable the whole subhepatic cavity, the ductus choledochus, the duodenum and the renal cavity are visible, as in the cadaver The most favourable case is that of a thin woman, with ptosis and supple abdomen

Freeing the Bile Ducts.—If adhesions bind down the liver and the bile-ducts to the stomach, to the duodenum, and to the colon, free them in order to recognise the gall bladder and the neighbouring organs If the bladder be not adherent, the gall bladder does not require liberation for it has contracted no adhesion with the intestine The most favourable case is an enormous gall bladder, thickened, and crammed with calculi, for which a simple cholecystectomy is to be performed

Extirpation from Below Upwards or Direct —Should cholecystectomy be performed from below upwards (Mayo-Gosset)—which consists in cutting the cystic duct first and separating the gall bladder from the liver, from the deeper parts to the exterior—or should cholecystectomy be direct, by dissecting the gall bladder from the fundus to the neck?

If extirpation from below upwards be possible, give it the preference, for there is no risk of drawing on or kinking the ductus choledochus angular displacement of the duct from traction runs the risk of the operator placing the ligature on the wall of the duct itself, and hence obliteration of the common bile-duct or biliary fistula from suppression of a part of its wall

If there be tight adhesions therefore it is better to excise the gall bladder by the direct route but if the adhesions be lax or absent, perform cholecystectomy from below upwards

Exposure of the Junction of the Biliary Ducts —Make a button hole incision with scissors in the peritoneum covering the junction of the ducts Expose the cystic and common bile-ducts with scissors, sometimes closed sometimes open and with a tampon, examine the common bile-duct and see if it be dilated or not if not it can be concluded there are no stones in the common bile-duct Catch the cystic duct between two J L Faure s *forceps*, traction of the pelvis stretches the cystic artery, which is to be cut tie *the artery and duct with catgut 0 (cholecystectomy from below upwards)* Tie the pedicle of the gall bladder not close to the *ductus choledochus or close to the gall bladder*, but in the middle of the cystic duct If the ligature be too near the ductus choledochus, it runs the chance of strangulating it or of partly pinching it, and hence fistula or contraction if too near the gall bladder there is danger of leaving a part of the gall bladder which, dilated becomes infected and can cause attacks of inflammation

Liberation of the Gall Bladder from Below Upwards —The small serous flap round the gall bladder remains adherent to the hepatic tissue Some arterioles give way in the bed of the gall bladder catch and tie them. The blood may still come from the bed of the gall bladder in the neighbourhood of the anterior border of the liver Make some stitches in X with catgut 0 with Lane s curved needle Suture the peritoneal flaps which surround the stumps of the cystic artery and of the cystic duct If a part of the liver some centimetres square remain bleeding slightly tampon with warm saline compresses

Subhepatic Drainage—Before closing the abdomen, insert two long drains under the liver with two pieces of rubber If gauze drains be used, place between two of them a perforated rubber tube

It might be thought the abdomen ought to be closed completely, but loosening of the ligature on the cystic duct has been observed It is wise to drain and that for eight days However, when the gall bladder is slightly diseased and normal in size, thus leaving a large amount of peritoneum, allowing of complete peritonisation, drainage is unnecessary In every case, a small rubber tube or a bundle of threads is sufficient

Lower Pillet s cushion

Closure of the Abdomen—In cases where the angular incision is employed the drain should pass into the angle uniting the oblique and the descending part of the incision (Villard) The closure should be made at three levels

(*a*) Deep button hole continuous suture, on the vertical part of the incision, from above below the stitches should be close together a similar continuous suture of button hole stitches, on the oblique part of the incision.

This continuous suture includes the peritoneum and the deep layer of the muscular aponeurosis

(*b*) Second level (catgut 1) interrupted suture, bringing the muscles and the superficial aponeuroses into apposition.

(*c*) The skin is to be closed by two silkworm gut sutures and clips The two sutures are to be introduced on both sides of the drains (Villard), and should include the skin and the deep aponeurotic level, so as to separate the suture from the drainage canal The rest of the skin is to be brought together by clips

Dressing—Do not apply a bandage round the body, but layers of gauze fixed by strips of sparadrap (oxide of zinc plaster)

Technique of Supraduodenal Choledocotomy for Calculi—Many conditions are unfavourable and give a high operative mortality

(*a*) Tachycardia 90 in cases of jaundice—*i.e.*, a rapid pulse

(*b*) Liver hard, hobnail indicating biliary cirrhosis

(*c*) Deep jaundice existing for many months

(*d*) Oliguria Asthenic appearance

This state is due to culpable extemporising

Two assistants should stand on the left side of the patient facing the operator wearing rubber gloves covered with cotton gloves

Disinfect the skin with benzene, then with ether, and lastly with tincture of iodine

Position —Place a cushion in the hollow of the back, or better, Pillet s movable cushion.

Four towels should mark off the field of operation.

Incision —Make a very long right paracostal, oblique incision, a thumb's breadth below the costal margin

Divide the aponeurosis and the muscles

Hæmostasis —Be very careful to stop all bleeding with catgut 0

Opening the Peritoneum —Open the peritoneum in the vertical part of the incision Apply two tissue forceps to the edges of the peritoneal incision, and follow by its transparency the direction of the scissors, cut the peritoneum at an equal distance from the edges of the musculo-aponeurotic incision

Evisceration of the Liver —The assistant should draw on the divided round ligament, whilst the operator seizes the right lobe of the liver, behind and to the right, so as to deliver it This is sometimes impossible owing to adhesions or from retraction of the subhepatic pedicle, or from the shape of the patient s thorax and abdomen In old cases of angio-cholitis the gall bladder is small retracted and embedded in the omentum

If the case be favourable (ptosis supple ligaments and abdominal wall), the operator, thanks to the cotton gloves or to the two compresses, should seize firmly the right lobe of the liver at the right and behind, bringing it into the wound, and finally exteriorising it Exposure is perfect The liver is to be entrusted during the whole operation to the assistant at the patient s head, wearing cotton gloves or employing compresses The liver is to be turned back on to the thoracic wall

Liberation of the Biliary Ducts —The gall bladder is often small, retracted, and adherent to the duodenum to the omentum, or to the stomach Dissect the gall bladder, especially at the duodenum this dissection between the duodenum and the gall bladder ought to be made with the greatest care, because injury to the duodenum is a serious accident it may require immediate suture which complicates the operation or division of the duodenum, completed by a gastro-enterostomy

Aspiration of the Fluid in the Gall Bladder (bile, pus serous effusion) which discharges on to the compresses Use an aspirator, electric if possible a needle and a tube the needle should have

a diameter of 5 millimetres, and the tube a diameter of about 8 millimetres Only employ a tube if the gall bladder has opened spontaneously The liberation of the gall bladder is often very troublesome, by degrees the junction of the ducts is reached, where it is nearly always possible to identify each structure in the hepatic pedicle The operator often recognises a stone in the mass of the subhepatic pedicle

Division of the Common Bile Duct in its Axis—Open the duct, search for the calculi and remove them by a curette, or by forceps To complete the exploration, introduce the bent index or little finger into the common bile and hepatic ducts to find out if another calculus be present, if none be found, pass a dilator with Beniqué s curve into the hepatic duct and into the duodenum If again there be no calculus, exploration should cease During the whole operation the aspirator dries the lumen of the common and of the hepatic duct

Complementary Cholecystotomy—If an atrophied gall bladder remain embedded in a fatty peritoneum open and empty it of pus and of calculi if they exist Removal might cause bleeding from the inferior surface of the liver These patients are weak, and bleeding surfaces and manipulations should be reduced to a minimum

Incise the thick fat round the gall bladder, and then the gall bladder which is exposed wipe its mucosa with ether and place a drain inside This drain should be fixed in and emerge through a drainage opening in the abdomen.

Drainage of the Common Bile-Duct—Introduce a Kehr s tube the size of a pencil Do not open or cut it Insert it in the following way first, its lower part into the ductus choledochus then its upper part into the hepatic duct, it should be introduced by dissecting forceps

The opening in the common bile-duct being larger than the diameter of the tube, the former must be contracted by a small continuous suture with catgut 0 with a curved needle The tube ought to come out on friction so that the bile does not collect between the tube and the ductus choledochus

Subhepatic Drainage—Three compresses of gauze or sheets of rubber Either of these is to be placed side by side between the mass of the intestine and the lower surface of the liver

In addition to the Kehr s tube if gauze compresses have been inserted place an ordinary perforated drainage-tube between

the lower surface of the liver and the compresses (Villard),* consequently three subhepatic compresses, and one within the gall bladder a Kehr s tube, and a subhepatic tube will protrude from the abdomen

Closure of the Abdomen—This should be at three levels, deep, button hole stitches, a second level of catgut 1 clips and silkworm gut for the skin

Dressing—The Kehr s tube is to be stuck to the skin by some small strips of sparadrap, some thick layers of gauze are to be placed on the wound and fixed by some bands of leucoplast The body should not be bandaged Kehr s tube should remain fifteen days, the ordinary tube and the compresses eight days, sometimes they have to be withdrawn in two or three days

See if the bile discharge by Kehr s tube If not, the outlook is unfavourable The bile ought to flow out at the end of the operation.

Kehr s tube is only 35 centimetres long, it is to be attached to a longer tube which falls into a bowl Between the two a glass window allows us to see if the bile be discharging, it also shows if the bile be viscid, in this case the tube should be removed before fifteen days (Villard)

DANGERS OF OPERATION IN CASES OF JAUNDICE HEPATIC SHOCK AND HÆMORRHAGE—The patient operated upon for an affection of the biliary passages has been subjected to a straight forward operation without incident The evening of the operation his appearance is normal, but during the night not so good The second day the patient becomes restless complains of nausea ceases to be interested in his surroundings, and refuses to drink the tongue becomes dry, and depression sets in, and he then dies about the fourth day Autopsy reveals nothing

The researches of Crile have shown shock is accompanied by cellular alterations of the brain of the liver and of the suprarenal capsules These three lesions are associated when there is collapse. If the liver of an animal be removed the cells of the brain very quickly disintegrate—in less than an hour The brain cannot live without the liver After certain operations notably delayed operations on the ductus choledochus and above all if there be jaundice, the liver already altered cannot bear the operation especially narcosis by ether or by chloroform What occurs in the liver? The cells cease to breathe and absorb oxygen but this form of

* Victor Pauchet Une matinée chirurgicale à Lyon. Chirurgie biliaire chez le Professeur Villard (*Journ. de Méd de Paris* April 1 1922)

asphyxia of the hepatic cells is, above all, the result of the narcosis by ether or by chloroform by making use of regional anæsthesia, combined or not with carbon monoxide, there is no asphyxia of the cells Moreover, narcosis by carbon monoxide should be produced slowly, and combined with local anæsthesia This 'blocking of the nerves prevents the brain from suffering shock, it is all the more necessary to make a very large abdominal incision to reduce the intra abdominal manipulations, the patient's body should be surrounded by warm cloths, for the liver is sensitive to cold The manipulations on the liver should be gentle, during closure of the wound do not tie the threads too tightly, so that pain is not produced after the operation. The stomach and the liver should be kept warm during the operation with cloths soaked in serum at 40°, and after the operation by electric cataplasms or water bottles at 45° Warm water should be drunk The blood supply to the brain must be constantly maintained The circulation in the brain promotes respiration of the liver cells, if, then, the blood pressure be lowered or the patient be anæmic from long illness, transfusion of blood is indicated before and after the operation.

The internal respiration of the liver cells is very slow if the patient do not have sufficient liquid, he must therefore absorb a large quantity by the mouth by the rectum, and by the cellular tissue The patient should be given 3 to 4 pints of sugared fluid *per diem*

Shock should be prevented rather than treated if it exist, it is by knowing and fearing the crisis that it can be prevented and the patient saved The surgeon ought not to be content with a counter-offensive against the evil, but should always attack vigorously The enemy should be in flight before he has been able to attack It is much better to employ the remedies which heighten his vitality rather than wait until it is so diminished that reaction is impossible Prevention is better than cure it is better to avoid a fire than to put it out It is better for the patient to be treated by all the remedies in one s power before complications have occurred (Crile)

To sum up to ward off hepatic shock, avoid anything that can diminish the potential vitality of the subject calm his anxiety before the operation by reassuring him and by morphia cut the path of sensibility by local anæsthesia if possible, by prolonged analgesia (anacaine) Complete it by narcosis with carbon monoxide which does not produce asphyxia of the hepatic cells.

Do not operate with blunt, but with cutting instruments which do not drag on the nerves

Do not leave the bleeding surface without covering it with warm saline compresses Employ transfusion of blood before and after the operation

Reduce all hæmorrhage to a minimum

Avoid all loss of heat

If there be blood in the abdomen from traumatism or from the operation, do not remove it before the end of the operation, because it protects the intestine

Do not move the patient uselessly

Leave the abdomen open as short a time as possible

Do not manipulate the viscera unnecessarily, consequently, make a large incision

Give some injections of artificial serum during the whole of the operation

If the tension be low, and the patient anæmic or jaundiced, employ transfusion of blood

Where there is great weakness, perform the operation in two stages *

Remember the principal seat of metabolism is the liver consequently keep the hepatic region warm before, during and after operation give warm injections and warm drinks

Avoid dehydration and if it be present, give by the rectum, drop by drop, 3 or 4 pints of sugared water *per diem* before and after the operation

On what do the later complications of cholecystectomy depend? —In cases of cholecystectomy a permanent biliary fistula may result or attacks of angio-cholitis and peri angiocholitis with the formation of an abscess and discharge of bile What are the causes of these complications? They are many

(*a*) The surgeon has left behind a calculus in the common bile-duct, he has omitted to explore all the biliary passages

(*b*) The gall bladder has been ligatured too far from or too near the ductus choledochus instead of the ligature being applied to the cystic duct, at the junction of the neck and of the duct it has been made either directly on the pelvis or close to the ductus choledochus, even pinching a part of its wall the bile can collect afresh in the remains of an infected gall bladder and attacks of inflammation be

* Anus biliaire, Victor Pauchet *Journal la Clinique*, January 1922

produced, if the ligature be applied *too near the ductus choledochus* it may cause contraction of its calibre or a permanent biliary fistula may ensue In both cases it is a mistake in technique The surgeon ought to place the ligature exactly where it is required He must see the ductus choledochus distinctly, identify the cystic duct, the neck of the gall bladder, the pelvis, etc , before applying the ligature

MINIMAL OPERATION IN TWO STAGES—*First Stage* —Biliary anus *Second Stage* —Removal of the stones

The abdomen having been opened, one of two conditions exist, the gall bladder is distended or it is atrophied and contracted

(*a*) *If the gall-bladder be distended*, puncture and open it, and remove the stones which present themselves, without curetting, so as not to cause bleeding, introduce a drainage-tube

(*b*) *If the gall-bladder be contracted*, look for the ductus choledochus at the most accessible and the most dilated point (ductus choledochus or hepatic duct), puncture and empty it aspirate the bile with a syringe or an aspirator, incise the dilated duct at the most accessible point, insert a tube which drains the bile externally Perform no manipulations to remove the stones Use a *large* tampon to the subhepatic cavity to prevent the infected bile flowing into the peritoneum

The large oblique, subcostal incision appears to us to be the best for draining the common bile-duct

FIG 75.—RETENTION OF BILE FROM GALL STONES IN THE DUCTUS CHOLEDOCHUS.

Formation of a stoma. Calculus of the ductus choledochus: gall bladder distended and communicating with the distended part of the ductus choledochus. Puncture of the biliary passages through the gall bladder

Foie=Liver. *Vésicule biliaire*=Gall bladder *Canal cholédoque*=Ductus choledochus. *Duodenum*=Duodenum.

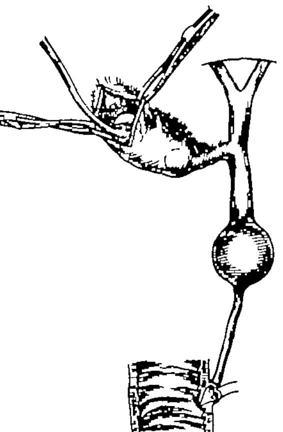


FIG 76.—RETENTION OF BILE FROM GALL STONES IN THE DUCTUS CHOLEDOCHUS.

Formation of a stoma. The operator removes the calculi which are visible. He avoids making the mucosa bleed, and abstains from any manipulative exploration.

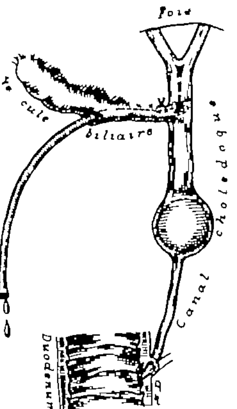


FIG 77.—RETENTION OF BILE FROM GALL-STONES IN THE DUCTUS CHOLEDOCHUS.

Formation of a stoma. The gall stones have been removed. The bile drains away because the cystic duct is free. Drainage of the gall bladder The operator avoids exploring the biliary passages in order to detect a stone in the ductus choledochus.

Foie=Liver *Vésicule biliaire*=Gall bladder *Canal cholédoque*=Ductus choledochus. *Duodenum*=Duodenum.

IV

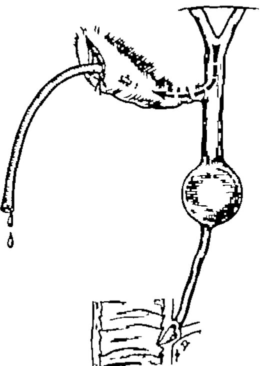


Fig 78 —Retention of Bile from Gall Stones in the Ductus Choledochus

Formation of a stoma. The bladder is contracted and empty The operator whilst seizing it has broken it. The flow of bile proves the cystic duct is permeable. Nélaton s catheter has been introduced into the biliary passages, which are not to be explored

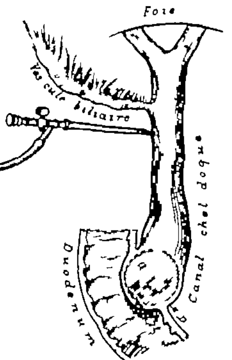


Fig 79 —Retention of Bile from Gall Stones in the Ductus Choledochus.

Formation of a stoma. The bladder is contracted. The operator looks for the distended point in the ductus choledochus. He punctures the duct and empties it

Foie=Liver *Vésicule biliaire*=Gall badder *Canal cholédoque*=Ductus choledochus *Duodénum*=Duodenum.

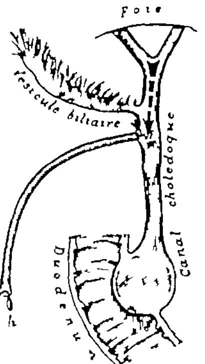


Fig 80 —Retention of Bile from Gall-Stones in the Ductus Choledochus.

Formation of a stoma A Nélaton s catheter is introduced into the opening, which is slightly enlarged

Foie=Liver *Vésicule biliaire*=Gall bladder *Canal cholédoque*=Ductus choledochus. *Duodénum*=Duodenum.

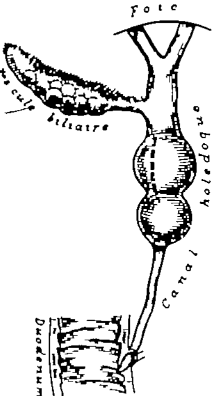


FIG. 81.—RETENTION OF BILE FROM GALL-STONES IN THE DUCTUS CHOLEDOCHUS.

Formation of a stoma. The contracted gall bladder contains some calculi the ductus choledochus is distended exactly at the junction of the ducts. A calculus prevents puncture and drainage of the ductus choledochus. The operator incises the duct at the spot where the calculus protrudes.

Foie = Liver *Vésicule biliaire* = Gall-bladder *Canal cholédoque* = Ductus choledochus. *Duodénum* = Duodenum.

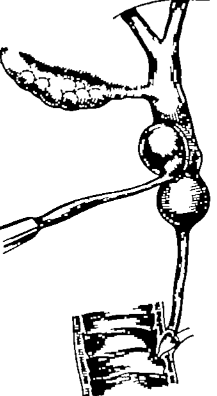


FIG 82.—RETENTION OF BILE FROM GALL-STONES IN THE DUCTUS CHOLEDOCHUS.

Formation of a stoma. The calculus, which shows itself, is removed by a curette. Drainage by this means is made easy The other calculi are left in position, without exploration.

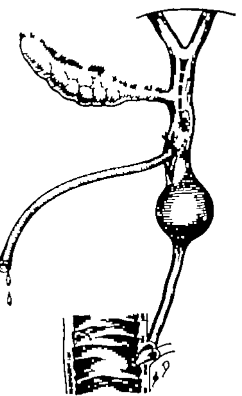


FIG 83.—RETENTION OF BILE FROM GALL-STONES IN THE DUCTUS CHOLEDOCHUS.

Formation of a stoma. A Nélaton s catheter is introduced into the opening made for the removal of the calculus.

N B.—After the preceding operations the stone left behind in the ductus choledochus will only be removed after disappearance of the jaundice and improvement in the general condition.

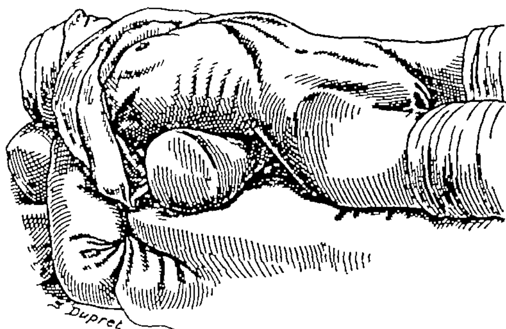


FIG 84 —CHOLECYSTECTOMY BY THE DIRECT ROUTE.

Position of the patient A cushion stuffed with horse-hair is placed under the inferior angle of the shoulder blade. Here the middle of the cushion is too empty it ought to be packed tighter The patient has the eyes bandaged and the ears stopped up, *as in every case of regional anæsthesia* the head is raised.

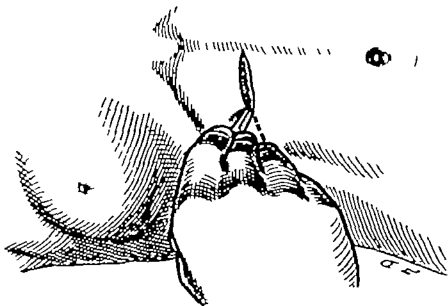


FIG 85 —CHOLECYSTECTOMY BY THE DIRECT ROUTE.

Para-costal incision very often the incision commences at the xiphoid cartilage and follows the costal margin, but 1 centimetre from it. Here the incision commences lower down because the liver has dropped.

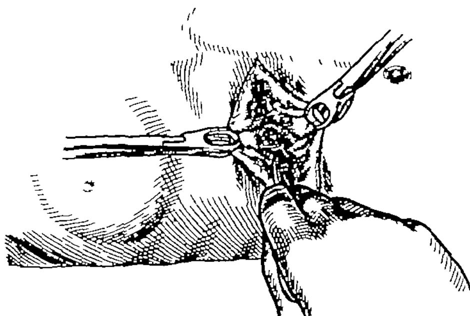


FIG 86.—CHOLECYSTECTOMY BY THE DIRECT ROUTE.
Incision of the skin and of the subcutaneous cellular tissue.

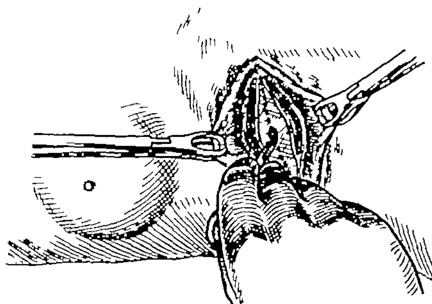


FIG. 87.—CHOLECYSTECTOMY BY THE DIRECT ROUTE.
Incision of the musculo-aponeurotic level of the abdomen.

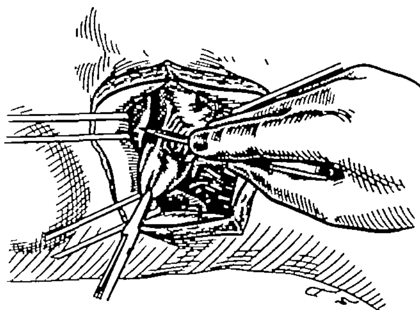


FIG 92.—CHOLECYSTECTOMY BY THE DIRECT ROUTE.

e gall bladder directly the plane of cleavage has disappeared, the knife
its part. Here there is a firm adhesion between the duodenum and the

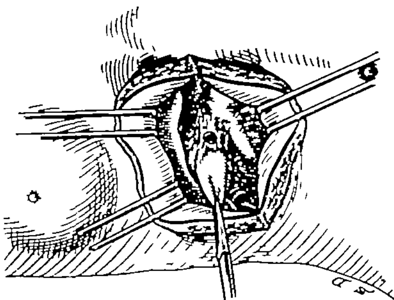


FIG 93.—C YSTECTO Y THE DIRECT ROUTE.

between the d a all bladder It explains a discharge of
calculi com ent the previous year.

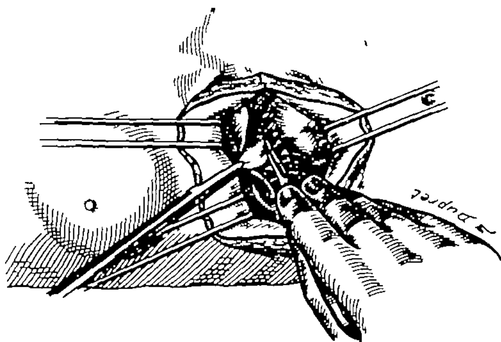


Fig 90 —Cholecystectomy by the Direct Route.

Dissection of the gall bladder by the knife.

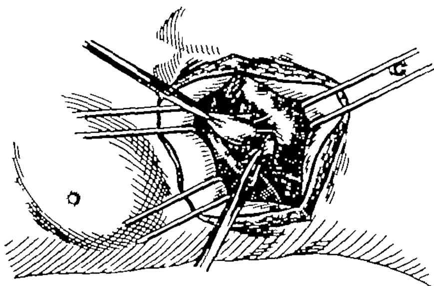


Fig 91 —Cholecystectomy by the Direct Route.

Separation of the gall bladder is continued by a compress on forceps: from time to time it is necessary to substitute the knife.

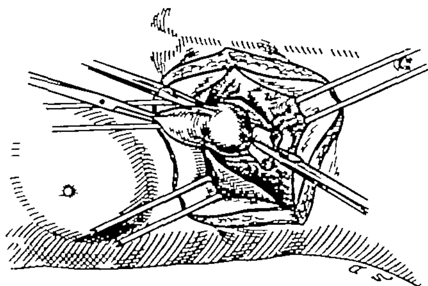


Fig 96 —Cholecystectomy by the Direct Route.

Dissection of the subserous coat reaches the pelvis, which contains two calculi.

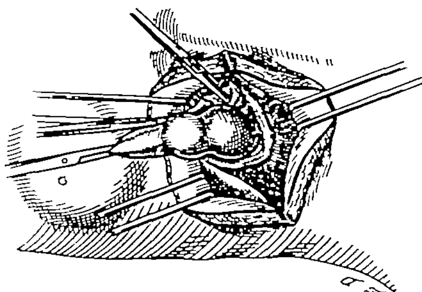


Fig 97 —Cholecystectomy by the Direct Route.

The compress continues to be employed.

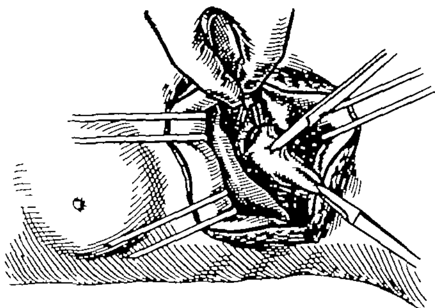


Fig 94.—Cholecystectomy by the Direct Route.

A perforation in the gall bladder is momentarily stopped up by forceps. The knife cuts the subserous coat of the gall bladder.

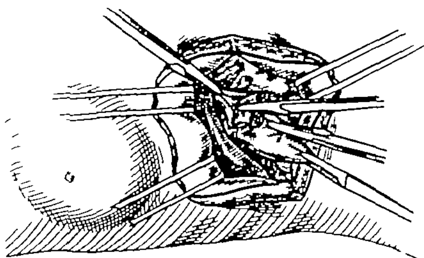


Fig 95.—Cholecystectomy by the Direct Route.

Dissection of the subserous coat is continued by the compress.

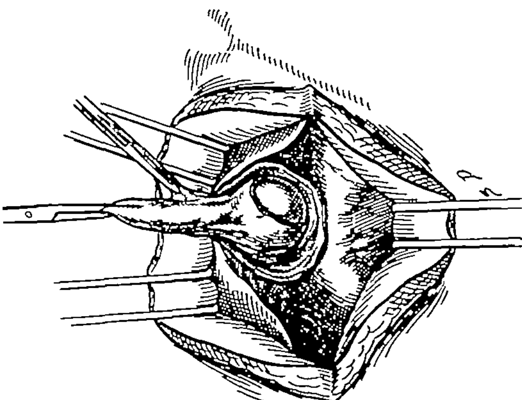
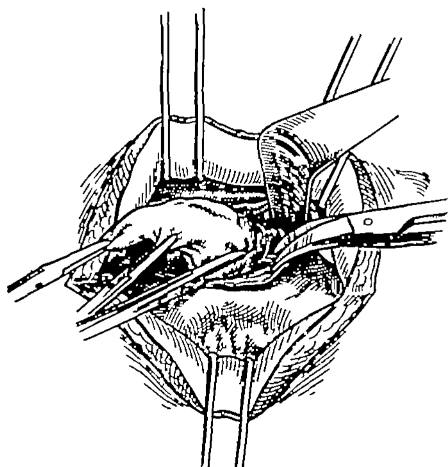


Fig. 100.—Cholecystectomy by the Direct Route.
Removal of the second calculus.



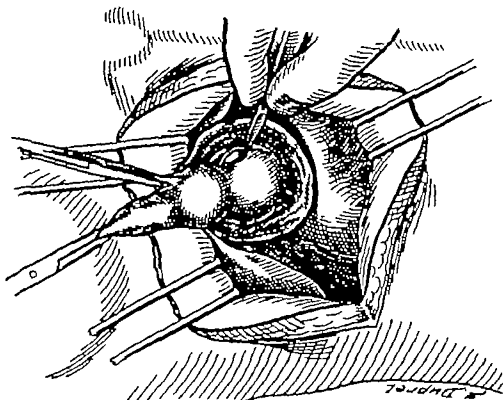


Fig 98.—Cholecystectomy by the Direct Route.

The compress cannot continue the liberation of the gall bladder because of the firmn of the adhesions; the operator removes the calculi.

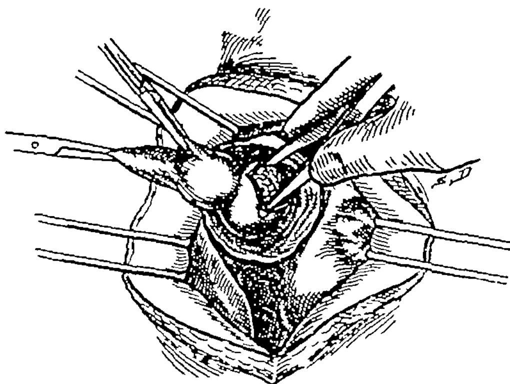


Fig 99.—Cholecystectomy by the Direct Route.

Removal of the first large calculus.

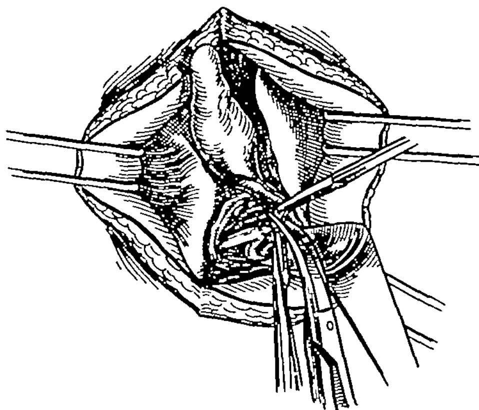


Fig 104 —Cholecystectomy by the Direct Route.
Division of the cystic duct.

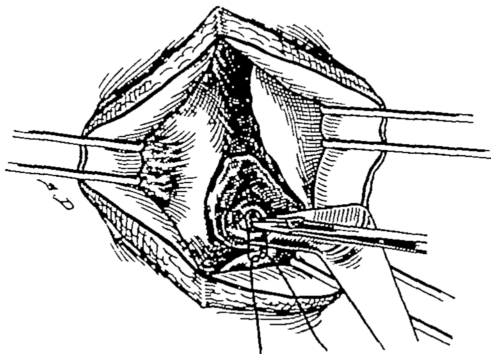


Fig 105 —Cholecystectomy by the Direct Route.
Ligature of the cystic artery Note the cavity round the gall bladder formed by the serosa surrounding the organ.

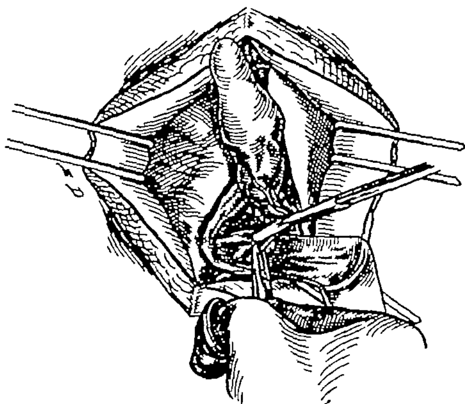


Fig 102.—Cholecystectomy by the Direct Route.

The operator has freed, laid bare, and identified the ductus choledochus, the hepatic duct the cystic duct and the cystic artery Ligature of the cystic artery

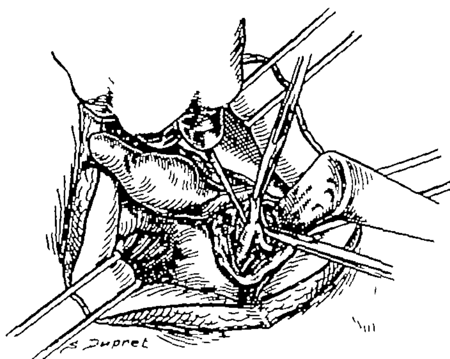


Fig 103.—Cholecystectomy by the Direct Route.

Ligature of the cystic duct the ligature is to be applied at this point, not close to the ductus choledochus, which may contract it, or on the neck of the gall bladder which runs the risk of leaving remains of the infected ductus choledochus.

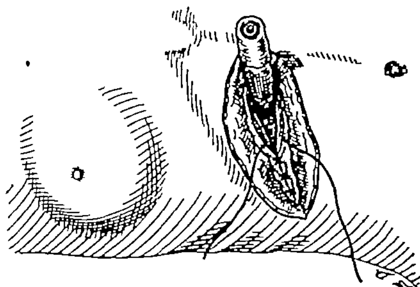


Fig 108.—Cholecystectomy by the Direct Route.
Closure of the wall with slowly absorbable catgut.

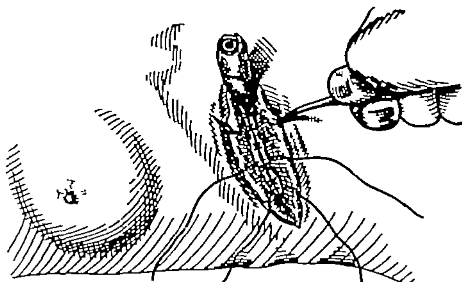


Fig. 109.—Cholecystectomy by the Direct Route.
Suture of the aponeurosis and of the subcutaneous cellular tissue with ordinary catgut

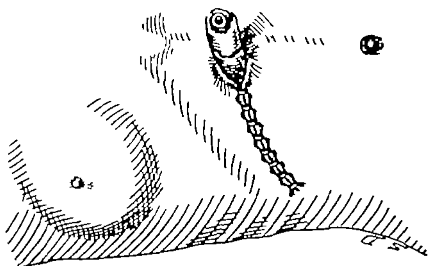


Fig 110.—Cholecystectomy by the Direct Route.
Suture of the skin with clips.

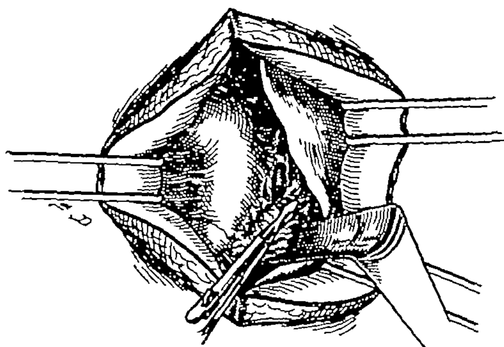


FIG 106 —CHOLECYSTECTOMY BY THE DIRECT ROUTE.
The peritoneum is closed by interrupted stitches of catgut

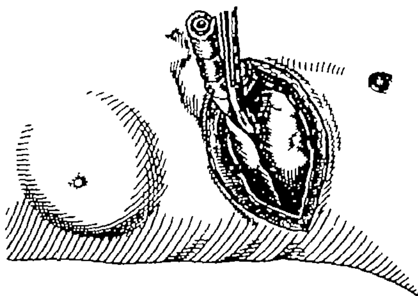


FIG 107 —CHOLECYSTECTOMY BY THE DIRECT ROUTE.
Notwithstanding the closure of the serous coat, a tube is generally *inserted for* drainage forty-eight hours.

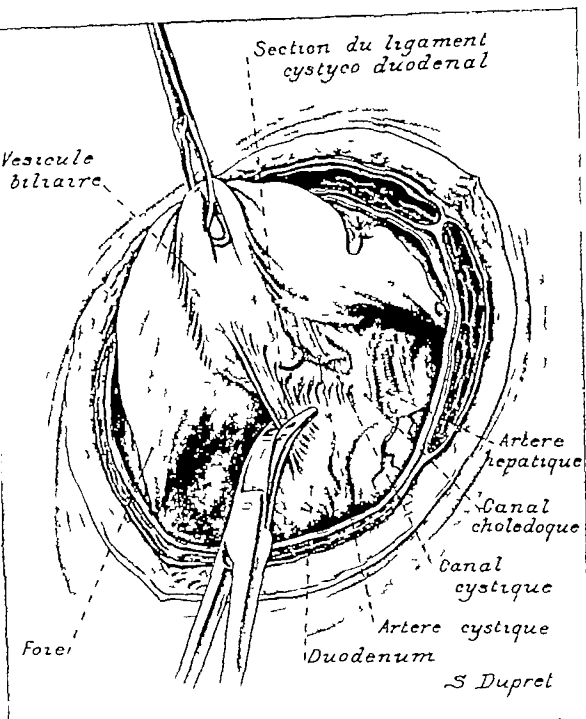


FIG 112 —CHOLECYSTECTOMY FROM BELOW UPWARDS.

The gall bladder previously emptied of its liquid contents, is separated from the doudenum and from the colon. Scissors divide the adhesions. Note the anatomy of the region. The suspensory ligament of the liver has been divided so that the latter can be perfectly brought outside

Vésicule biliaire = Gall bladder. *Section du ligament cystyco-duodénal* = Division of the hepato-duodenal ligament. *Artère hépatique* = Hepatic artery *Canal cholédoque* = Ductus choledochus. *Foie* = Liver *Canal cystique* = Cystic duct. *Artère cystique* = Cystic artery *Duodénum* = Duodenum.

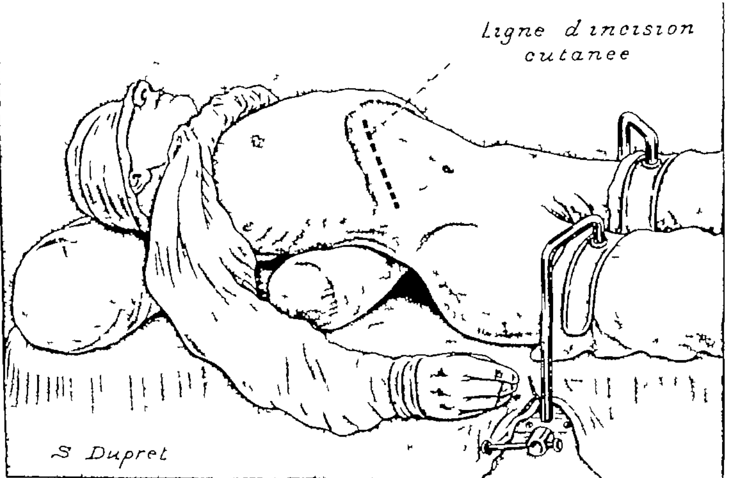


FIG 111 —CHOLECYSTECTOMY FROM BELOW UPWARDS

Position of the patient Mayo Robson s cushion, which ought to reach the inferior angle of the scapulæ so that the intestines fall into the pelvis. The present case is very favourable because the patient is very thin. The angular incision would be better The oblique incision can be replaced by a transverse one, which gives a little less space and is sufficient in a great number of cases.

This operation has been, a all the others, reproduced by sketches and photographs made and taken at the time. The position is the same as in Fig 84

Lig d incision cutanée—Line of the cutaneous incision

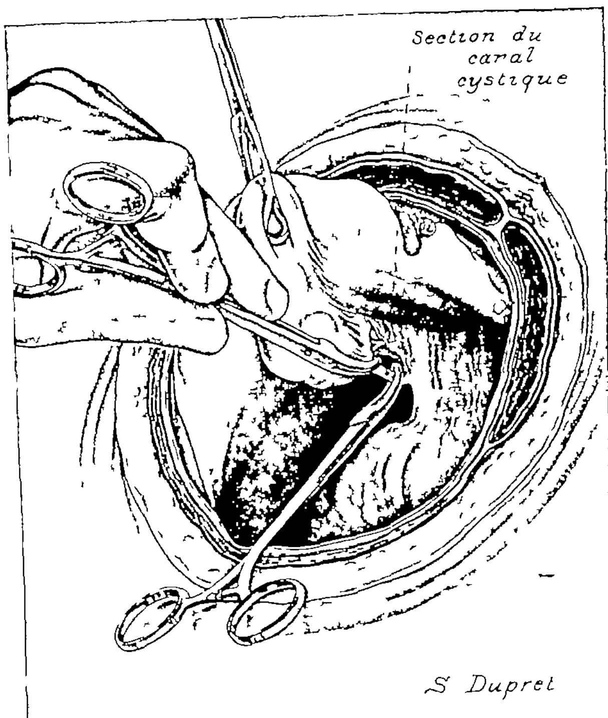


FIG 114 —CHOLECYSTECTOMY FROM BELOW UPWARDS.

The cystic duct is seized between two of J L. Faure s uterine forceps. Note the position of the cystic artery which ought to be tied afterwards.

Section du canal cystique=Division of the cystic duct.

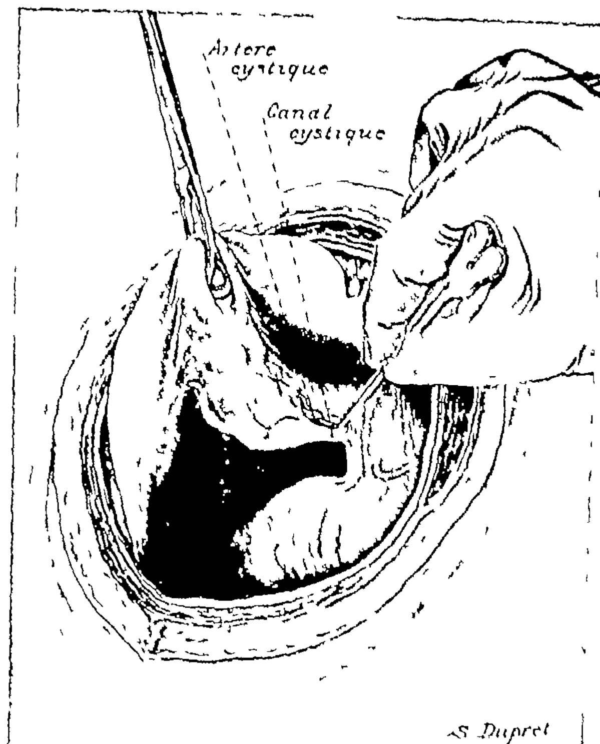


Fig. 113.—Cholecystectomy from Below Upwards.

The operator attacks the cystic duct directly after having opened the peritoneum which covers the ductus choledochus. It is necessary to lay bare the cystic duct like an artery so as to divide it and to tie it in the middle of its course.

Artère cystique = Cystic artery Canal cystique = Cystic duct

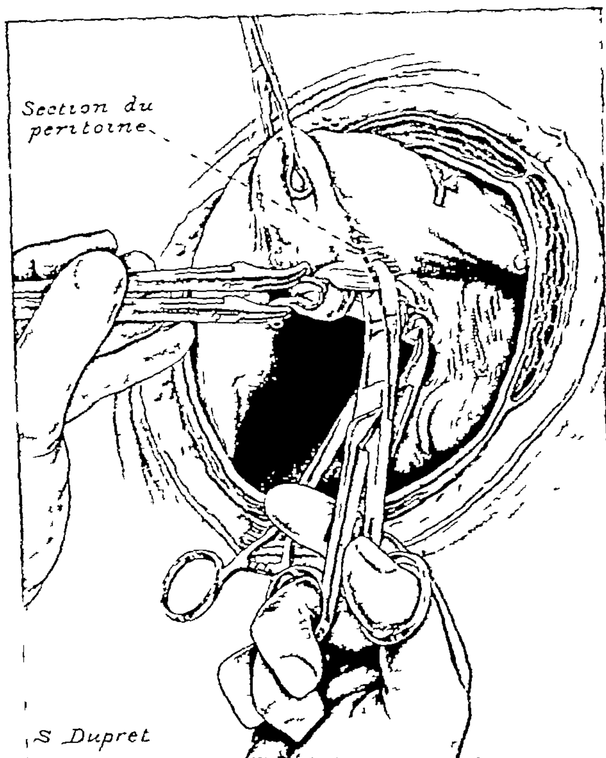


FIG 116.—CHOLECYSTECTOMY FROM BELOW UPWARDS.

Division of the peritoneum surrounding the gall-bladder As much as possible of the peritoneum adherent to the liver should be left so as to cover the raw surface of the cavity of the gall bladder.

Section du péritoine=Division of the peritoneum.

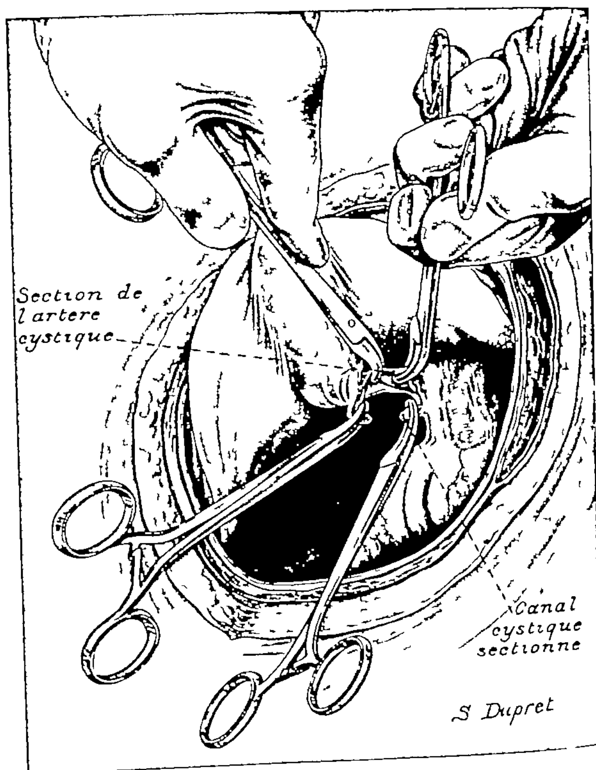


FIG 115.—CHOLECYSTECTOMY FROM BELOW UPWARDS.

Division of the cystic artery between two of J L. Faure s forceps.

Section de l'artère cystique=Division of the cystic artery *Canal cystique sectionné*=Cystic duct divided.

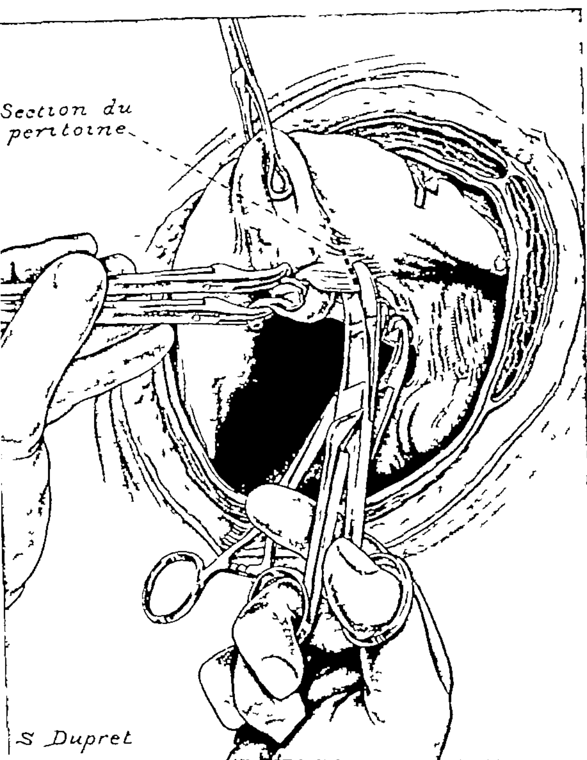


FIG 116 —CHOLECYSTECTOMY FROM BELOW UPWARDS.

Division of the peritoneum surrounding the gall bladder As much as possible of the peritoneum adherent to the liver should be left, so as to cover the raw surface of the cavity of the gall bladder

Section du péritoine=Division of the peritoneum.

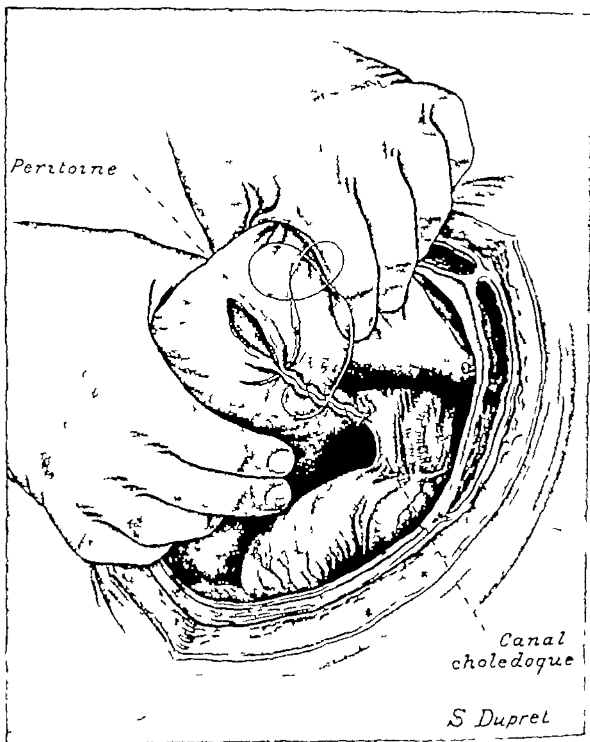


FIG 119—CHOLECYSTECTOMY FROM BELOW UPWARDS

The raw surface of the liver is re-covered by a continuous suture of slowly absorbable catgut 00

Péritoine=Peritoneum. *Canal cholédoque*=Ductus choledochus.

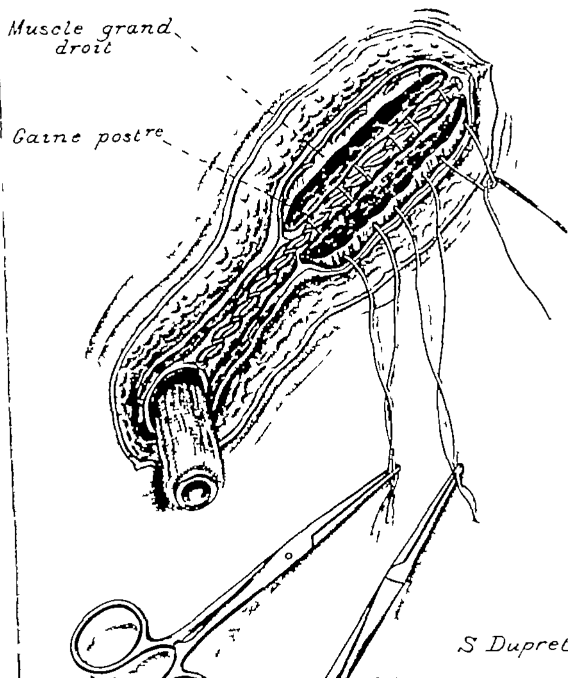


FIG 120 —CHOLECYSTECTOMY FROM BELOW UPWARDS

Restoration of the abdominal wall. The continuous suture of slowly absorbable catgut 00 has been applied to the peritoneum and to the subperitoneal fibrous layer The muscles are brought into apposition by some stitches in U with slowly absorbable catgut. A tube surrounded by gauze passes out by the lower extremity of the wound. Drainage can be dispensed with, but it is wiser to employ it.

Muscle grand droit=Rectus muscle *Gaine postre.*=Posterior sheath.

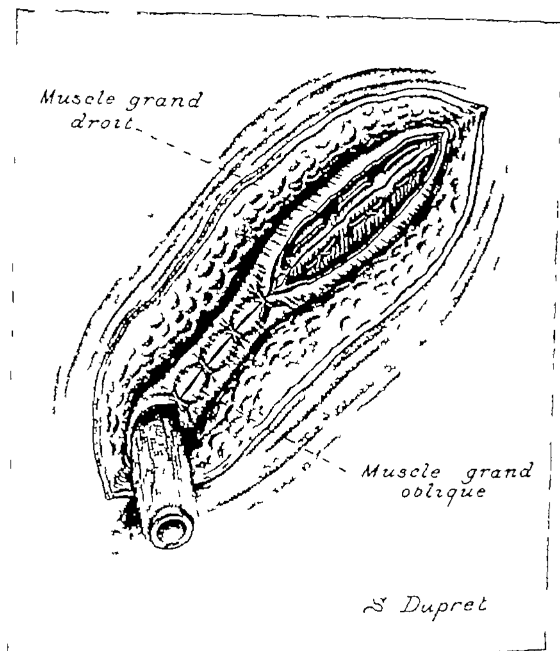


FIG 121.—CHOLECYSTECTOMY FROM BELOW UPWARDS.

Interrupted stitches bring together the aponeurosis of the external oblique.

Muscle grand droit=Rectus muscle *Muscle grand oblique*=External oblique muscle.

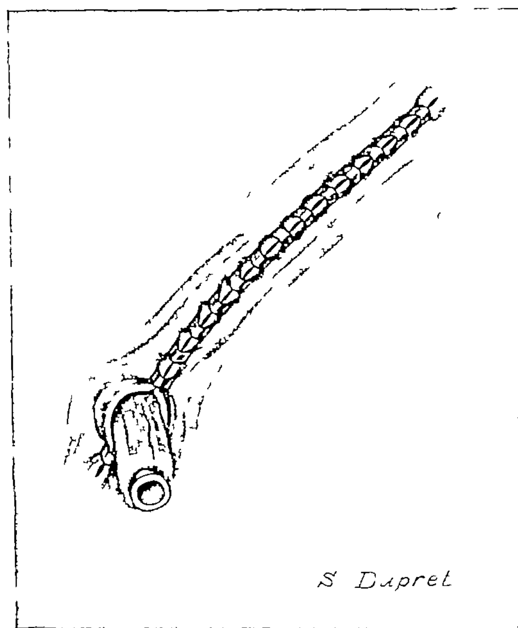


FIG 122.—CHOLECYSTECTOMY FROM BELOW UPWARDS.
Closure of the skin by Michel's clips.



FIG 123.—INFECTION OF THE NEW GALL-BLADDER, FORMED FROM THE PELVIS.

The operator intervening by the direct route, has placed the ligature above the neck of the gall bladder instead of exactly on the cystic duct as a result, an infected cul-de-sac persists which causes attacks of inflammation.

Quelques complications éloignées de la cholécystectomie=Some after-complications of cholecystectomy *Inflammation d'un reste de bassinet*=Inflammation of a remnant of the pelvis.

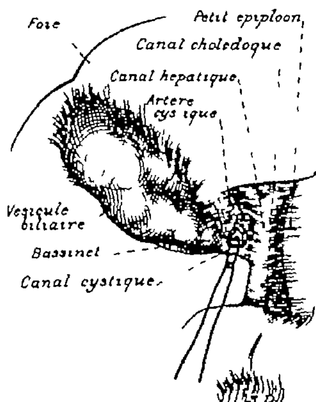


FIG 124.—HOW TO APPLY THE LIGATURE.

The ligature is equally distant from the ductus choledochus and from the neck of the gall bladder exactly in the middle of the cystic duct.

Foie=Liver *Petit épiploon*=Lesser omentum. *Vésicule biliaire*=Gall bladder *Canal cholédoque*=Ductus choledochus. *Bassinet*=Pelvis. *Canal hépatique*=Hepatic duct. *Artère cystique*=Cystic artery *Canal cystique*=Cystic duct.

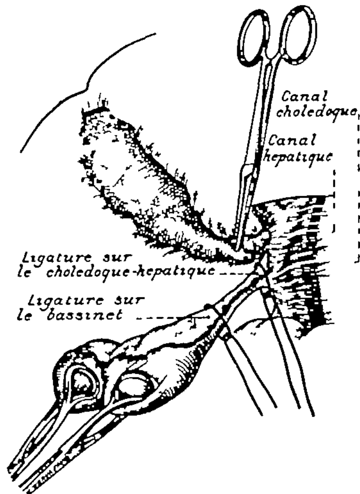


FIG 125.—THIS FIGURE SHOWS THE TWO FAULTS WHICH CAN BE COMMITTED BY THE OPERATOR THE THREAD ON THE LEFT IS TOO NEAR THE GALL-BLADDER AND ON THE PELVIS ITSELF

The ligature on the right is too near the wall of the ductus choledochus. In the first case, the complications indicated in Fig. 123 may occur later and in the other it explains the fistula of the common bile-duct in Fig 126.

Canal cholédoque=Ductus choledochus. *Canal hépatique*=Hepatic duct. *Ligature sur le cholédoque-hépatique*=Ligature on the hepatic and common bile-duct. *Ligature sur le bassinet*=Ligature on the pelvis.

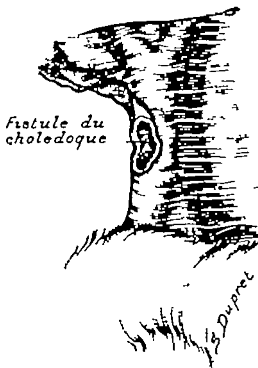


FIG 126.—FISTULA OF THE COMMON BILE-DUCT

Result of ligature of the cystic duct applied too near the common bile-duct.

Fistule du cholédoque=Fistula of the common bile duct.

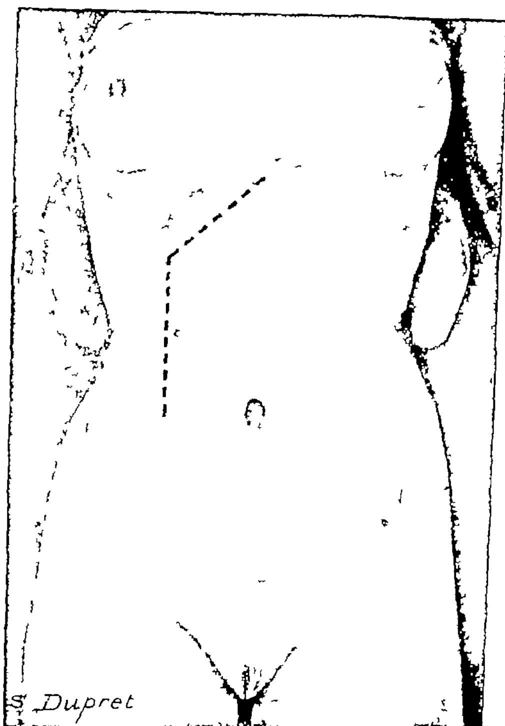


FIG 127 —BILIARY RETENTION FROM A CALCULUS. CYSTOTOMY OF THE COMMON BILE DUCT

The patient is in Mayo Robson s position (see Figs. 84 and 111). A cylindrical cushion 15 centimetres in diameter is placed under the base of the thorax, below the inferior angle of the scapula. Angular incision, the oblique part of which is continued about 1 centimetre from the costal margin; the vertical portion follows the external border of the rectus and stops at the umbilicus. This incision weakens a part of the abdominal wall, but eventration after the operation is rare.

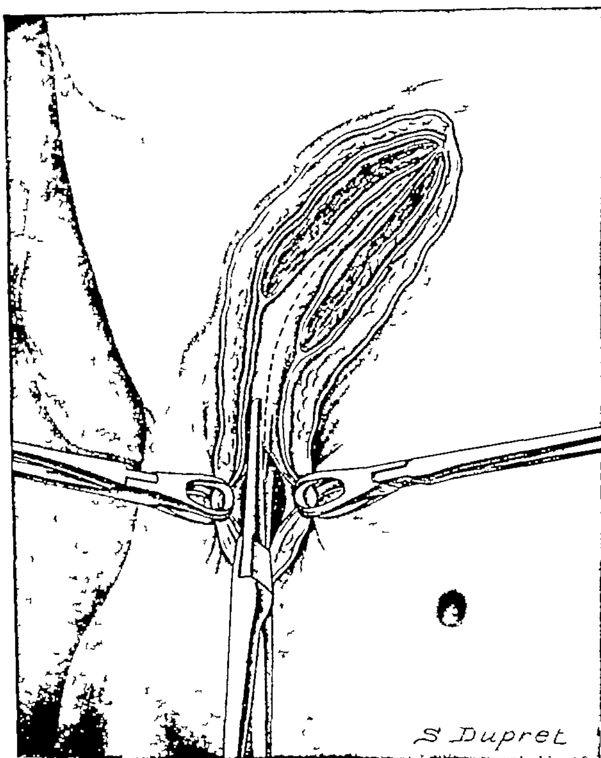


FIG 128 —BILIARY RETENTION FROM A CALCULUS. CYSTOTOMY OF THE COMMON BILE DUCT

Incision of the wall. The cutaneous angular incision has taken a curvilinear appearance. The muscles have been cut. There must be immediate hæmostasis. No artery forceps should encumber the operative field. The opening in the peritoneum is made from below upwards. The section follows the middle of the serous and the aponeurotic layer

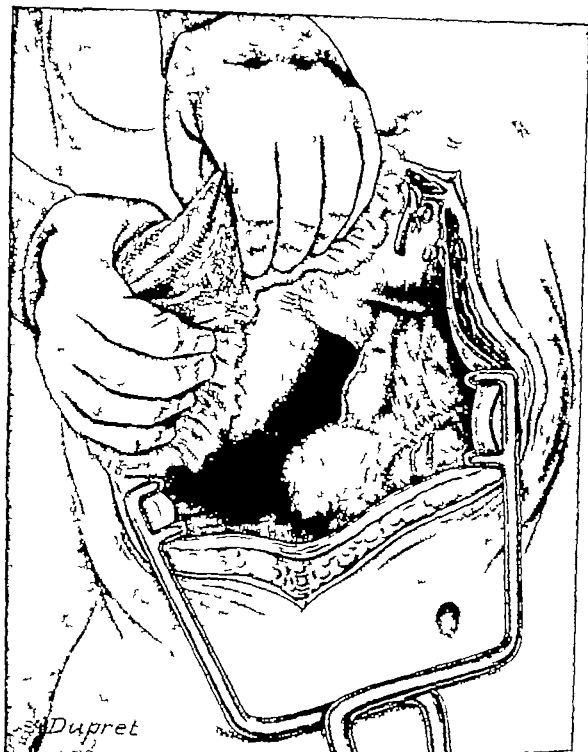


Fig 129.—Biliary Retention from a Calculus. Cystotomy of the Common Bile-Duct [?]

The hepatic ligament has been divided and tied. The liver is exteriorised by an assistant, who keeps it turned back over the right costal border: this is possible if there be ptosis and the abdominal wall be supple. It facilitates the manipulations. The region of the ductus choledochus and the gall bladder are clearly seen. Here the gall bladder is atrophied, as is the rule.



Fig 130.—Biliary Retention from a Calculus. Cystotomy of the Common Bile Duct

The distended common bile-duct is evacuated by an aspirator Compresses protect the peritoneum. They are not drawn in order not to hide the organs from the reader Above and to the left of the figure, the dotted line indicates the line of division of the common bile-duct.

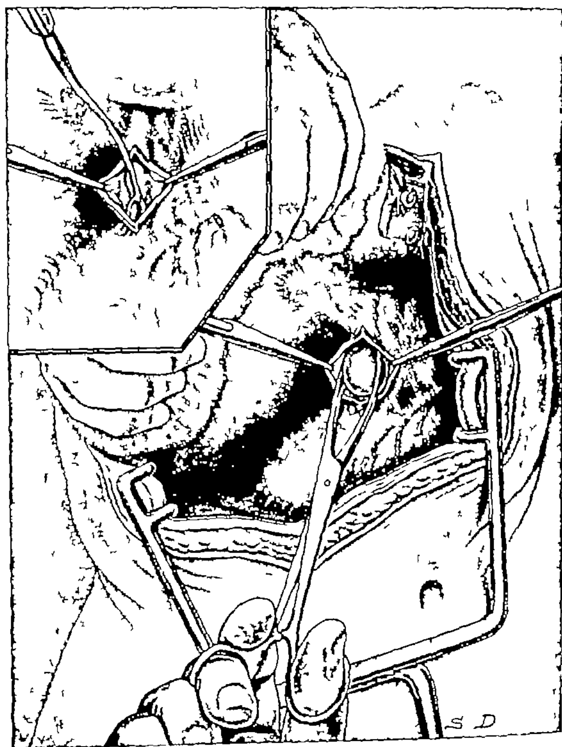


FIG 131 —BILIARY RETENTION FROM A CALCULUS. CHOLEDOCHO-LITHOTOMY

Removal of the calculus with forceps above and to the left of the figure, a curette removes some small calculi which occupy the retro-duodenal portion of the common bile-duct.

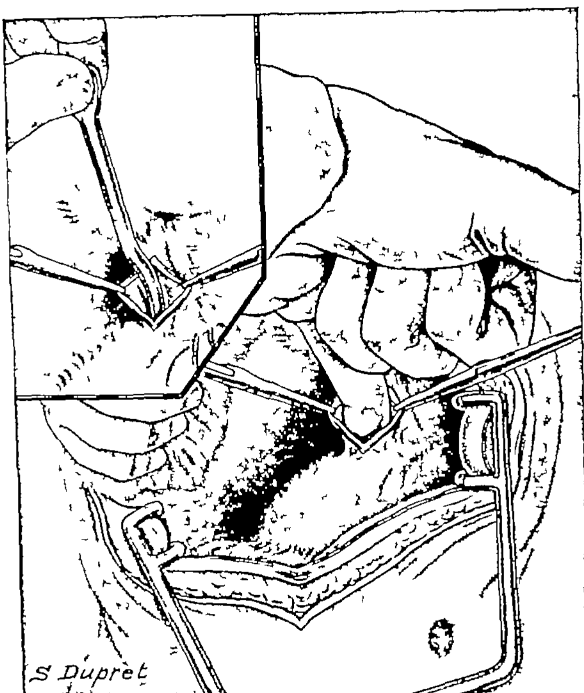


FIG 132—BILIARY RETENTION FROM A CALCULUS IN THE COMMON DUCT DIGITAL EXPLORATION

The little finger introduced into the common bile-duct explores its terminal portion. Above and to the left, a dilator with Beniqué's curve is introduced into the duodenum, where it passes freely

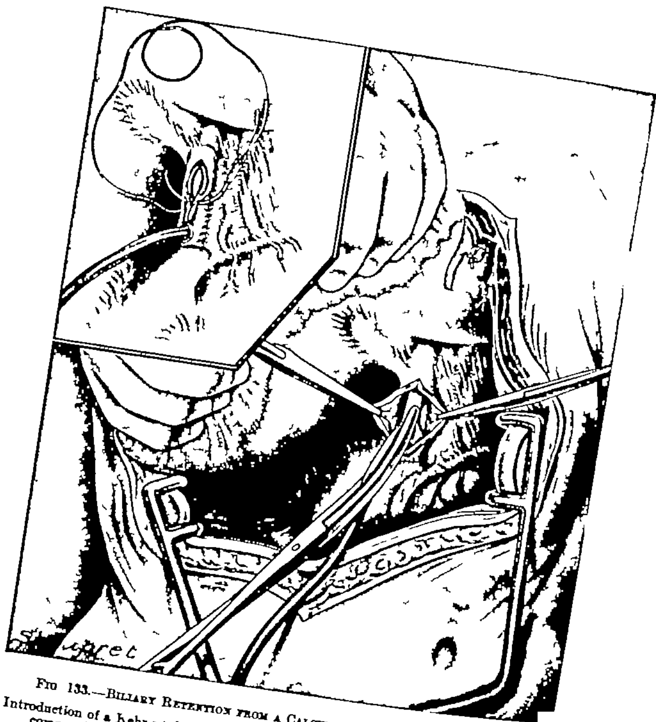


FIG 133.—BILIARY RETENTION FROM A CALCULUS. CHOLEDOCHO-LITHOTOMY

Introduction of a Kehr's tube (T tube). The lower arm of the T is introduced into the common bile-duct, the upper arm into the hepatic duct. Above and to the left, catgut continuous suture of the wound in the ductus choledochus. This latter ought to be emor-duced to the size of the tube so that the bile does not pass between the tube and some sutured duct

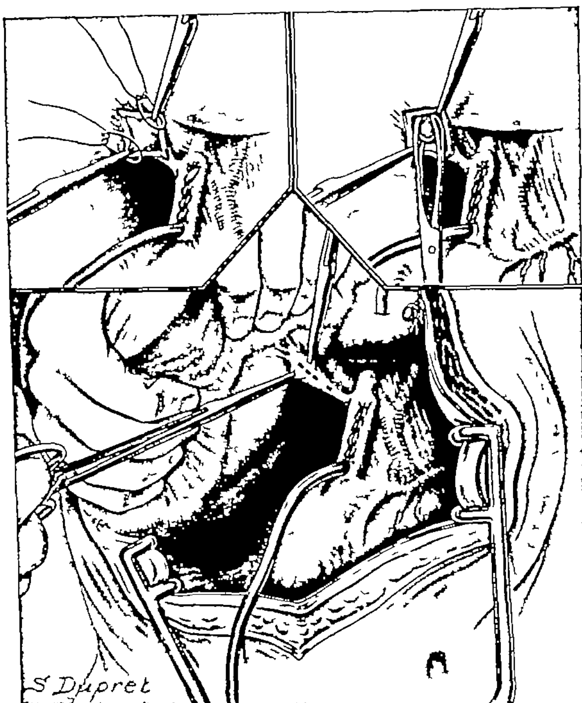


FIG 134 — BILIARY RETENTION FROM A CALCULUS. CHOLEDOCHO-LITHOTOMY

The operator cuts the atrophied gall bladder It should not be removed if the patient be jaundiced, in order to avoid a bleeding surface. Above and to the left, two ligatures on two vessels of the gall bladder Above and to the right, a calculus is removed. The gall bladder cut in this way after being rubbed with ether will atrophy

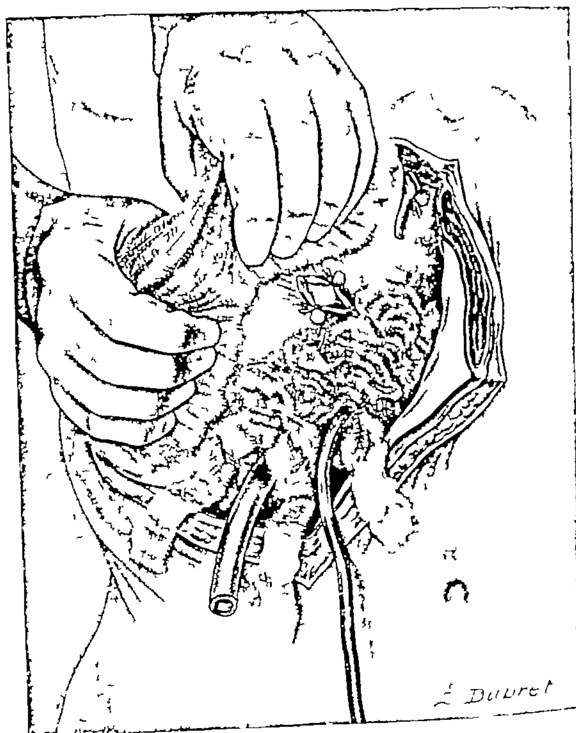


FIG 135.—BILIARY RETENTION FROM A CALCULUS. CHOLEDOCHO LITHOTOMY

How the subhepatic space is drained. A tube in the sutured common bile-duct, and three gauze drains.

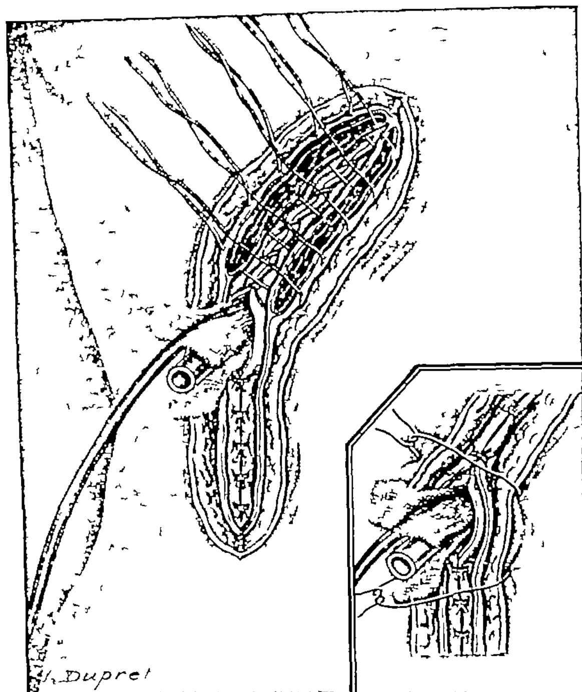


FIG 136.—BILIARY RETENTION FROM A CALCULUS. CHOLEDOCHO LITHOTOMY

How to close the abdominal wall. The tube passes out at the point where the oblique paracostal incision has become vertical. The peritoneum is sutured by a continuous suture of catgut. The muscles are brought together by interrupted stitches of slowly absorbable catgut. Below and to the right of the figure two silkworm gut stitches suture the wall *en masse*, to exclude the drainage canal and to separate it from the parietal suture.

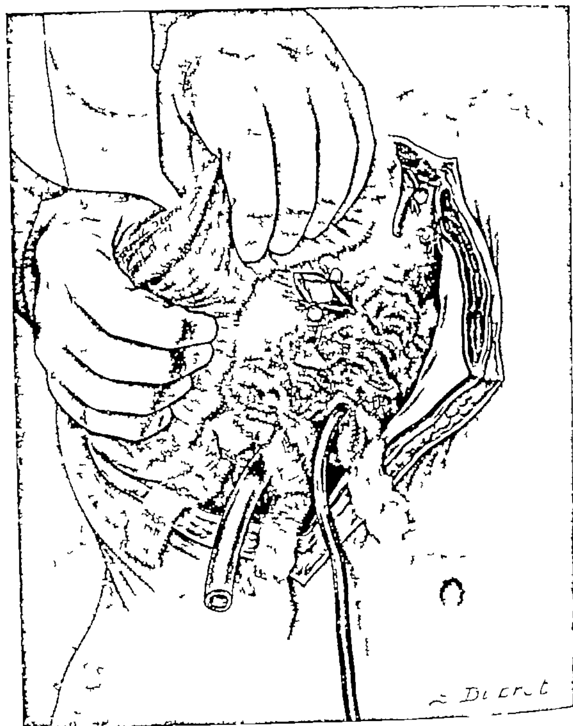


FIG 135.—BILIARY RETENTION FROM A CALCULUS. CHOLEDOCHO-LITHOTOMY

How the subhepatic space is drained. A tube in the sutured common bile-duct and three gauze drains.

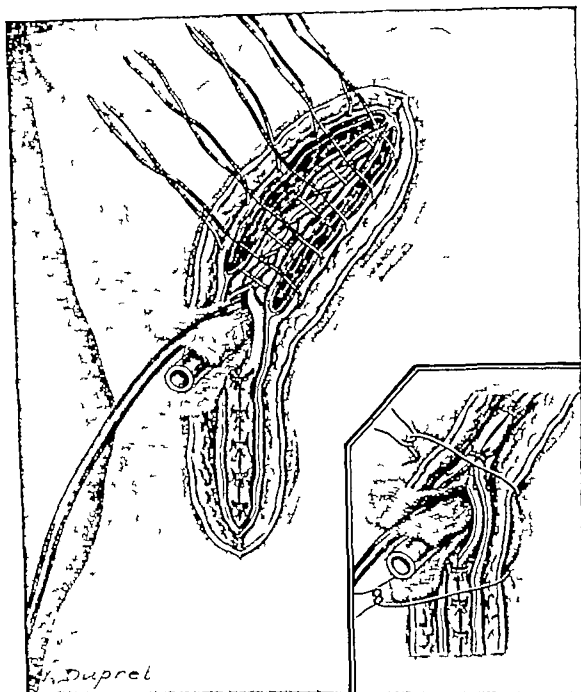


FIG 136 —BILIARY RETENTION FROM A CALCULUS. CHOLEDOCHO-LITHOTOMY

How to close the abdominal wall. The tube passes out at the point where the oblique paracostal incision has become vertical. The peritoneum is sutured by a continuous suture of catgut. The muscles are brought together by interrupted stitches of slowly absorbable catgut. Below and to the right of the figure two silkworm gut stitches suture the wall *en masse*, to exclude the drainage canal and to separate it from the parietal suture.

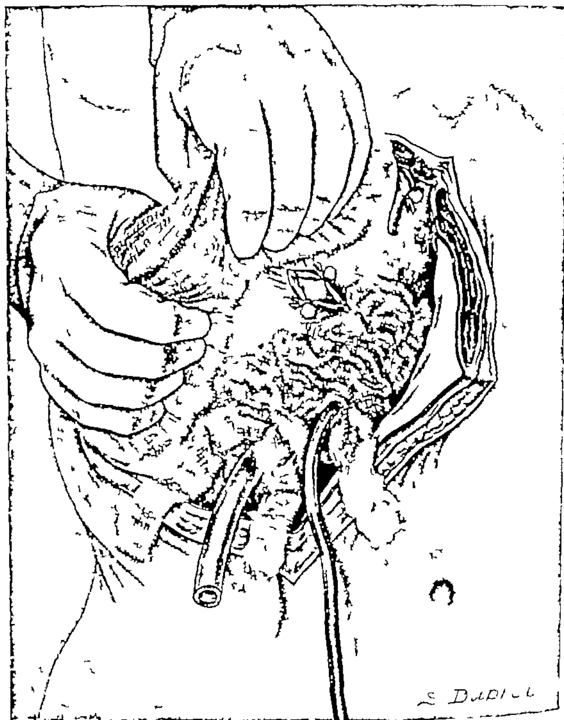


FIG 133.—BILIARY RETENTION FROM A CALCULUS CHOLEDOCHO LITHOTOMY
How the subhepatic space is drained. A tube in the sutured common bile-duct, and three gauze drains.

V

APPENDICECTOMY

THIS operation is very often performed, and by all surgeons There are some, however who still are in doubt regarding some technical details and also the indications for the operation

(*a*) Should the appendix be removed shortly after the commencement of an acute attack or should we wait for the condition to become quiescent?

(*b*) When should operation be performed after an acute attack?

(*c*) Should the appendix be removed in patients in whom an appendicular abscess has been opened?

(*d*) Before intervention during quiescence what treatment should be instituted?

(*e*) Is radioscopy of the intestine before operation a good thing to do?

(*f*) Should the patient be purged some days before operation, during the quiescent stage?

(*g*) What method of anæsthesia?

(*h*) What incision?

(*i*) Should the appendicular stump be buried?

(*j*) Should there be drainage?

(*k*) Should cæco-plication be performed in cases of chronic appendicitis?

Should operation for acute appendicitis be performed shortly after the commencement of an attack, or should we wait for quiescence?— The question does not arise in certain conditions no surgeon would hesitate to intervene if the attack appeared sufficiently serious or if one or more of the following symptoms were noted raised temperature (39° 39·5°) acute pain pronounced muscular resistance lowering of the arterial tension, or rapidity of pulse, toxic appearance oliguria or judging from the general appearance, an infective or gangrenous appendicitis was to be feared

We will not consider these conditions but will suppose an ordinary or slight appendicitis Should the patient be operated upon at once? Yes If we judge from the existing conditions the

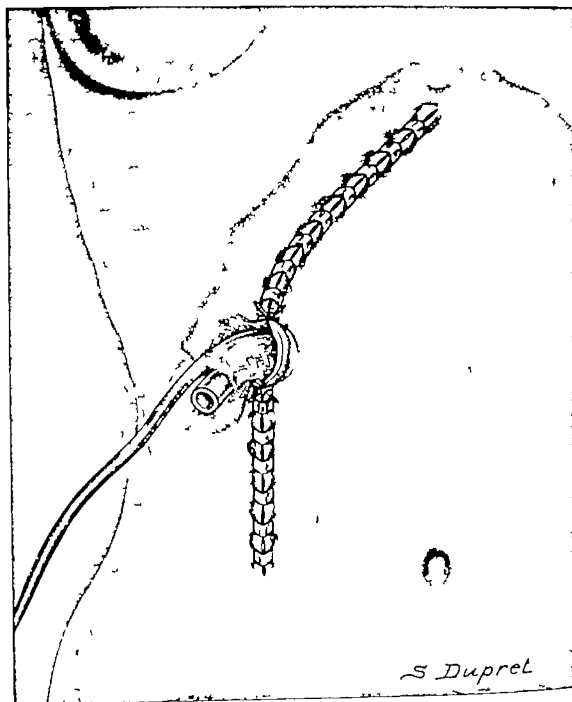


Fig 137.—Biliary Retention from a Calculus. Choledocho-lithotomy
Apposition of the skin.

What treatment should be instituted between an acute crisis and the operation?—We impose on all our cases of appendicitis a vegetarian diet exclusively (vegetables, fruit, cereals, digestive pastes), telling them to masticate slowly, only to drink water, to keep the abdomen warm during the winter (flannel bandages), and to take, every day, mineral oil at each meal Treatment by fermented milk ten successive days per month is a good practice

Should a radiogram be taken of the intestine in cases of chronic appendicitis?—If the appendicitis be acute and be quietening down it is unnecessary But if it be chronic from the beginning, the intestinal digestion should be examined, and this requires four, five, or six photographs, by which means dilatation of the cæcum or intestinal stasis may be noted. Do not forget to omit the use of paraffin ten days before radioscopy, otherwise the latter will give a wrong impression In cases of cæcal dilatation, or of stasis, appendicectomy ought to be completed by plication, freeing of adhesions, fixation, short-circuit, etc

Should the patient be purged some days before intervention?—If the appendicitis be quiescent, no, if it be chronic, yes The patient should then be purged at the latest two days before operation Between purgation and operation the patient should be placed on a fluid diet, with abundance of sugary liquids (syrup of fruits)

What method of anæsthesia should be used?—Generally, this question is of little moment, granted the operation is short and mild, and that the method of anæsthesia matters little Narcosis by ether requires most attention. Chloroform or spinal anæsthesia is too big an undertaking for so mild an operation. In thin or moderately fat (70 per cent) subjects we have recourse to regional anæsthesia in nervous subjects we add some whiffs of nitrogen monoxide.*

What incision ought to be employed?—This varies.

The incision of Walther-Jalaguier if local anæsthesia be employed and the appendix be in the pelvis, and if the supposed presence of adhesions suggest the possibility of the opening having to be enlarged.

The incision of McBurney answers most requirements in cases of local anæsthesia the patients experience some unpleasant sensa-

* "Anesthésie régionale, Pauchet, Sourdat and Labat Edited by Doin Paris, 1920

operation will be as slight as in the quiescent stage If the patient be seen at the very beginning, and if he be sent to hospital at once, *and his general state be very good* there is no disadvantage in operating straight away—in fact on the contrary The tediousness of convalescence is avoided and *the risks of complications* are removed.

In practice these conditions are rarely realised *It has happened* to us to operate on certain patients we have known and have had the opportunity of seeing from the beginning the operation has taken place in excellent conditions and cure has been rapid But in the majority of cases the surgeon is only called in some days after the commencement of the attack, the question of early interference, therefore, does not arise, quiescence should be awaited, the treatment should consist in liquid food, rest in bed Vichy water, ice, etc

When should we operate after an acute attack ?—The interval depends on its acuteness After a short attack of some hours duration, the operation can be performed at the end of eight or ten days There are no adhesions it is useless to wait If the *attack has been followed by a distinct feeling of doughiness round the* cæcum, wait six weeks or two months If an abscess has opened *spontaneously, or been incised, wait three months at least* after the disappearance of all doughiness or after cicatrisation of the skin.

Consequently, operation should be performed fifteen days to six months after the attack, according to its acuteness, and the symptoms of reaction which have been produced If a new exacerbation occur during convalescence operation should be performed at once without waiting for quiescence which runs the chance of never taking place

Should the appendix be removed in patients in whom an appendicular abscess has been opened ?—The question does not present itself, if there be eventration a fistula, or an abdominal wall with a weak cicatrix. The operation *permits of consolidation of the walls* and at the same time of removing a cause of recurrence, for sometimes recurrences take place after opening an abscess There is, perhaps, one kind of case where this operation may be considered unnecessary—viz when the patient has a stercoral fistula after incising an abscess, the appendix may then have been ruptured at the cæcum In these conditions it is probable recurrence will not occur yet if for any reason the abdominal wall must be repaired, it should not be done without removal of the appendix.

six, we have observed no difference in prognosis between the free and the buried stumps

Should drainage be employed ?—If the case be one of acute appendicitis and pus be present, even in a very small amount, drain The abdomen can be closed without drainage in other cases of acute appendicitis, only if they be operated upon at the commencement.

We rarely drain cases of quiescent appendicitis, except on two occasions—

(*a*) When, during the operation, an unsuspected abscess has contaminated the deep part of the peritoneum, and when it is impossible to clean the focus well with ether

(*b*) When there are deep adhesions, and a slight oozing persists A tube is to be placed for twenty four hours in Douglas pouch

It is more surgical to say never drain, but we have never regretted having employed drainage It is exceptional to drain, but in doubtful cases it is to be recommended. It is better supported by the peritoneum than by the meninges, by the pleura or by the synovial membranes

Should cæco-plication be performed in cases of chronic appendicitis ?—When there is slight stasis of the cæcum when the organ is thin lax, and large it is advantageous to perform plication. The abdominal incision ought to be larger than for simple resection of the appendix During reduction of the organ, moreover, rough manipulation might tear the sutured walls and provoke perforation.

Cæco-plication is an excellent operation A great number of chronic appendices are improved not by removal of the appendix, but by plication

tions when the muscles are being separated, we know not why If this incision give insufficient space, as a result of adhesions it is easy to enlarge it by separating vertically the sheath of the rectus and by prolonging transversely the incision of the internal oblique and of the transversalis over the posterior layer of the sheath of the rectus, which is pulled aside by a retractor

The median or the transverse suprapubic (Pfannenstiel) can be employed when, at the same time, the reproductive organs of the female have to be explored

The high transverse incision, with division of the rectus, can be used in cases where it is desirable to explore the appendix and the gall bladder at the same time it can only be employed if the wall be thin and supple In the latter case, the gall bladder can be removed after operating on the duodenum or on the stomach, and the cæcum can be brought up without difficulty, but if the abdominal wall be very muscular, care should be taken not to make a variety of incisions, especially vertical incisions of the rectus, for it causes too great destruction It is less mutilating to make two incisions—a small iliac incision (Walther-Jalaguier or McBurney), and a second incision by the gall bladder—at the most favourable places than a mixed and mutilating large one

Low Transverse Incision —For æsthetic purposes Jayle has recommended a low opening over the mons Veneris The operator divides the skin transversely then the aponeurosis of the external oblique, he opens the external border of the rectus divides the epigastric vessels and opens the peritoneum We have often carried it out with good results When the appendix is situated high up, or when there are adhesions, this incision is inconvenient It leaves no visible cicatrix

Should the appendicular stump be buried ?—Thierry de Martel has lately brought up the matter again at the Société de Chirurgie Like Ricard Arrau and Témoin he discountenances burying the stump We have followed his example in the majority of cases We bury the stump when the appendix is large when its walls are infiltrated thickened and infection suspected When on the contrary, the stump is small it is tied, when the cæcum is thin and atrophied when there is a chance of the suture perforating and when the appendix is hardly accessible during a laparotomy for uterine fibroid cholecystitis or gastric ulcer it is better not to bury it The stump should be short and tied, the mucous membrane should be cauterised We bury nearly one stump in

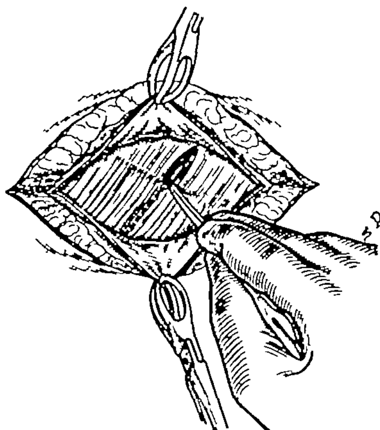


Fig 140 —Appendicectomy for Chronic Appendicitis

Separation of the fibres of the transversalis and of the internal oblique. Two tissue forceps hold the lips of the aponeurosis of the external oblique.

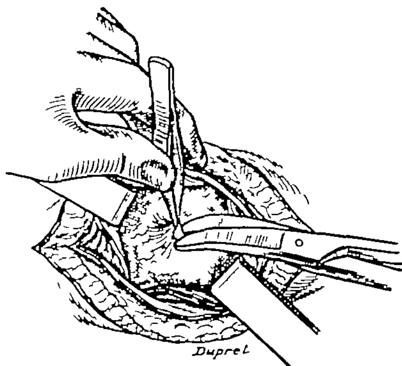


Fig 141.—Appendicectomy for Chronic Appendicitis

Incision of the peritoneum in the same direction as the separation of the internal oblique and of the transversalis.

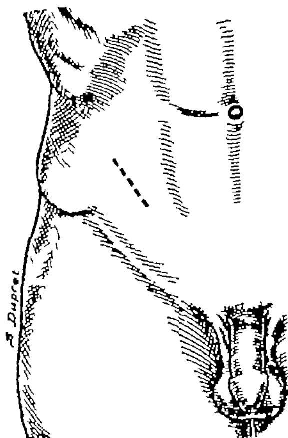


Fig 138.—Appendicectomy for Chronic Appendicitis.

McBurney's incision of the skin at the junction of the external one-third and of the internal two-thirds of a line passing from the umbilicus to the antero-superior iliac spine. The length of the incision should be proportionate to the stoutness of the patient. *In women, the incision should be made along an oblique line in a cutaneous fold.*

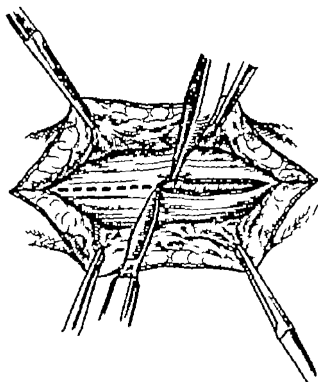


Fig 139.—Appendicectomy for Chronic Appendicitis.

Division of the aponeurosis of the external oblique this incision is to be made parallel to that of the skin.

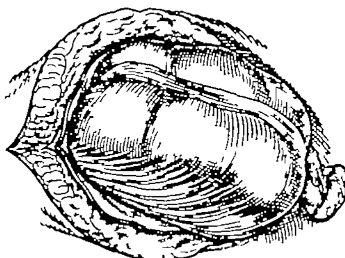


FIG 144.—APPENDICECTOMY FOR CHRONIC APPENDICITIS

Appearance of the dilated cæcum, with a membrane of Jackson (to the left of the figure). The above condition shows slight stasis of the cæcum and requires plication after removal of the appendix.

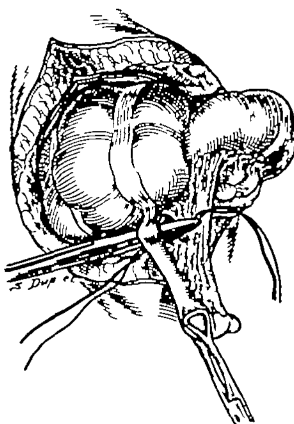


FIG 145.—APPENDICECTOMY FOR CHRONIC APPENDICITIS.

Note the size of the cæcum, and the glands in the ileo-cæcal flexure. Slight adenopathy is nearly constant in cases of true chronic appendicitis. Forceps have split the meso-colon close to the appendix, and passed a double thread, one white and the other black (Thierry de Martel) the first is for the appendix and the other for the meso-colon.

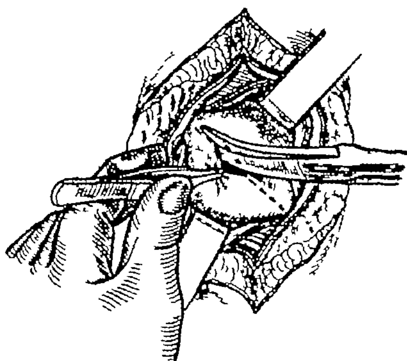


FIG 142.—APPENDICECTOMY FOR CHRONIC APPENDICITIS.
Division of the peritoneum.

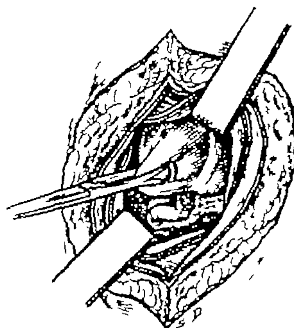


FIG 143—APPENDICECTOMY FOR CHRONIC APPENDICITIS.
The cæcum is brought up by means of ring forceps.

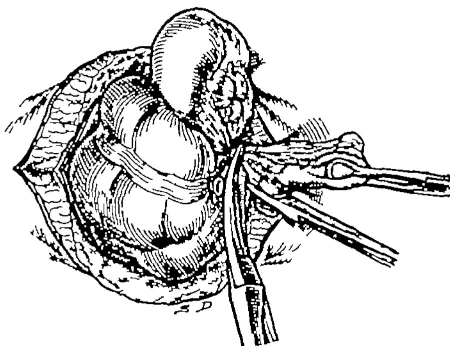


FIG. 148.—APPENDICECTOMY FOR CHRONIC APPENDICITIS.
The mesenteriole is tied and then divided.

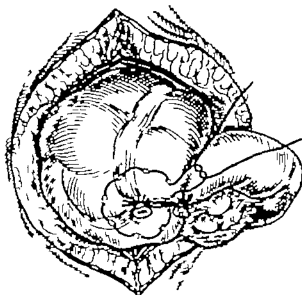


FIG. 149.—APPENDICECTOMY FOR CHRONIC APPENDICITIS.
Purse-string suture (unnecessary stage). Burying the appendicular stump. It should not be done whenever the cæcum is very thin and difficult to bring up, and when it is necessary to complete the operation quickly. In nine-tenths of the cases we refrain, and cure is just as good.

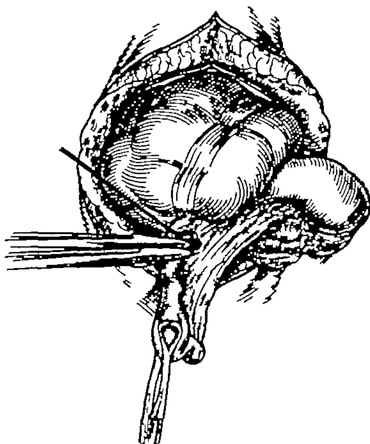


FIG 146.—APPENDICECTOMY FOR CHRONIC APPENDICITIS

How to prepare for division of the appendix: forceps are placed close to the ligature; they expel the contents to the end of the appendix, which is always septic a second forceps are placed immediately beside the first, which are then removed.

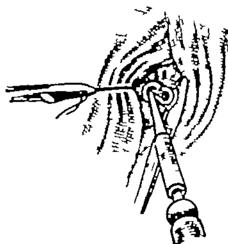


FIG 147 —APPENDICECTOMY FOR CHRONIC APPENDICITIS.

Division of the appendix at the part crushed by the first forceps, which have been with drawn. Note the surrounding compresses so as to avoid the discharge of septic matters on to the cæcum

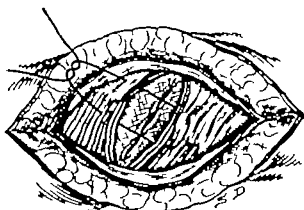


FIG 152.—APPENDICECTOMY FOR CHRONIC APPENDICITIS

The opening in the muscle due to separation of the transverse and of the internal oblique is brought together by a catgut stitch in U

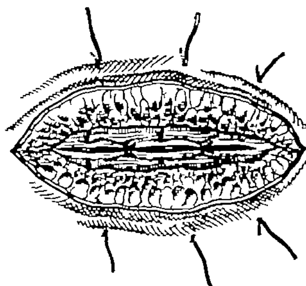


FIG. 153.—APPENDICECTOMY FOR CHRONIC APPENDICITIS.

Two catgut stitches in the aponeurosis of the external oblique and three stitches *en masse* (*fat subject.*)

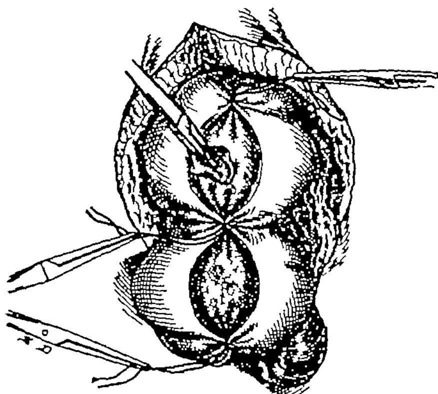


FIG 150.—APPENDICECTOMY FOR CHRONIC APPENDICITIS.

Cæco-plication. Three fixation stitches have been applied between two longitudinal bands. The space between is painted with iodine to promote adhesions of the serous surfaces.

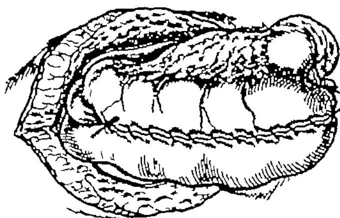


FIG 151.—APPENDICECTOMY FOR CHRONIC APPENDICITIS.

Continuous suture of the plication is finished

VI

CANCER OF THE CÆCUM

Right Hemi-Colectomy

CANCER of the cæcum has been treated by resection of the right colon We ask the reader to refer to what we have written on this subject in Vol III of "Practical Surgery Illustrated'

The case which has served as a model for these drawings is that of a stout man on whom the greatest surgical precaution was necessary, as well as particular care of the intestinal sutures

In fat people particular care should be taken with the intestinal *sutures and the extent* of the operation reduced as far as possible The patients have, on the one hand, slight powers of resistance and on the other the fat covering the intestine is injurious to the firmness of the suture

With cancer of the cæcum in a fat subject the first idea which ought to enter the surgeon s mind is an operation in two stages

(a) Ileo-sigmoidostomy

(b) Right hemi-colectomy

But in the present case we performed right hemi-colectomy in one stage Why? Because there was an enormous glandular mass in the mesentery, this was a sign of virulency of the growth and of its rapid progress More than that to perform ileo-sigmoidostomy, it is necessary to choose the part of the ileum to be anastomosed with the sigmoid, but the part of the ileum which it is proposed to divide is governed by the extent of the resection of the latter, and by the ischæmia following resection of the mesentery, in which are included the infected glands Here the adenopathy I repeat was enormous it was, therefore, necessary to begin by removing the mesentery in order to find out the extent of the ischæmic intestinal region and of the part of the ileum which had to be anastomosed There are, then cases where right hemi colectomy must be performed in one stage

On principle, we prefer end to-end intestinal anastomoses after resection or end side in cases of anastomosis

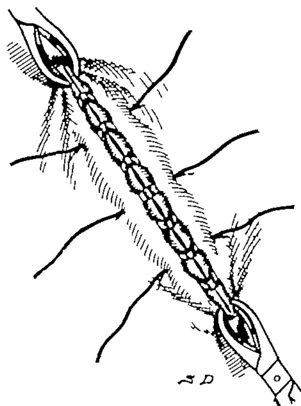


Fig 154 —Appendicectomy for Chronic Appendicitis.

Closure of the skin by means of clips. Note the rôle of the tissue forceps, which draw horizontally in opposite directions. A compress should be placed between the stitches and the skin to produce hæmostasis of the cellular and fatty tissue.

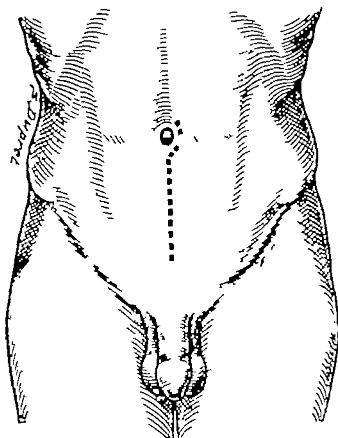


Fig 155.—Cancer of the Cæcum. Right Hemi-Colectomy

Median incision. Inclined plane. Spinal anæsthesia.

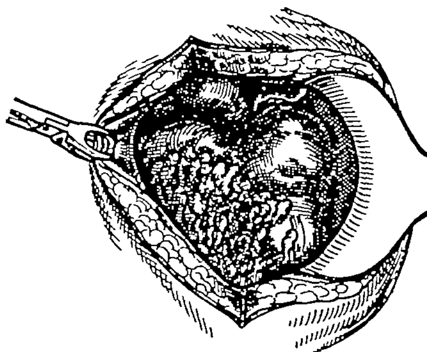


Fig 156.—Cancer of the Cæcum. Right Hemi-Colectomy

The patient was obese with fatty meso-colons, a condition which compelled the surgeon to reduce the operation to a minimum. The pubis is above, the operator on the right side.

In fat subjects, however, implantation and end to-end anastomosis give moderate results Separation of the anastomoses is frequent The fat stands in the way of the security of the sero-serous sutures The operator then, ought to perform side-side anastomosis, as we did in the present case

In cases of cancer of the cæcum, note should be made (*a*) of the general state of the patient, and (*b*) of the condition of the lesions If the general state be bad, at first only ileo-sigmoidostomy should be performed It is necessary first to discover, as far as possible, the amount of the small intestine which ought to be removed later, at the time of the radical operation, and that is the difficulty

In the obese side-side anastomosis should be performed after closure of the two intestinal ends in a cul-de-sac Many times we have carried out this anastomosis with the button when the calibre of the small intestine was large with sutures when the small intestine was narrow On principle, suture is the better Is the use of the button easier ? I do not think so A mediocre surgeon makes mediocre sutures, but they hold sufficiently A mediocre surgeon who applies a button badly runs the chance of the production of rapid disunion I consider, then, the button can only be applied by skilled hands I do not speak of good intestinal sutures, which can only be made by still more dexterous hands

To sum up, in a fat or cachectic subject, a lateral ileo-sigmoidostomy *should be performed, and, three weeks after,* secondary resection.

In a resistant and obese patient right hemi-colectomy, followed by immediate side-side anastomosis of the sigmoid, or of the transverse colon

In a resistant and thin person right hemi-colectomy, followed by end to-end ileo-colostomy

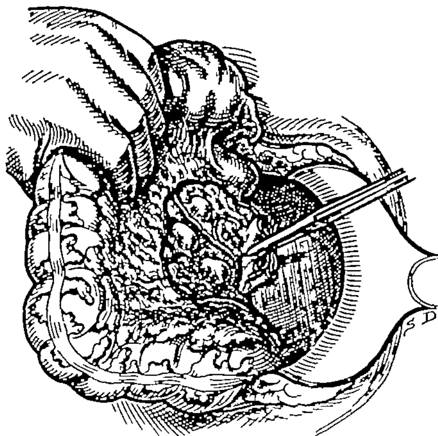


Fig. 159.—Cancer of the Cæcum. Right Hemi-Colectomy
Separation of the colon from the parietal layer of the peritoneum on the right side. Rôle of the compress. The manipulations should be gentle so as not to tear the venules.

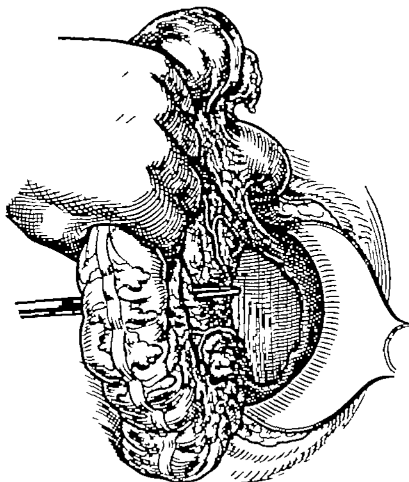


Fig 160.—Cancer of the Cæcum. Right Hemi-Colectomy
Hæmostasis of the meso-colon.

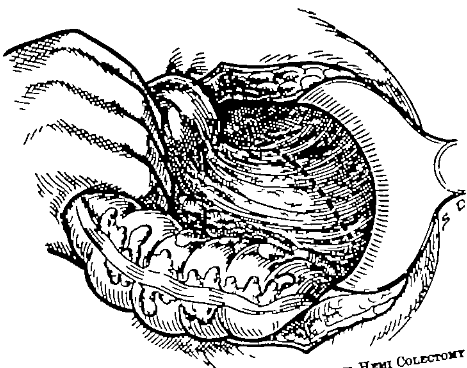


Fig 157.—Cancer of the Cæcum. Right Hemi Colectomy

Separation of the colon from the parietal layer of the peritoneum on the right side Division of the parietal peritoneum some centimetres from the cæcum and from the ascending colon.

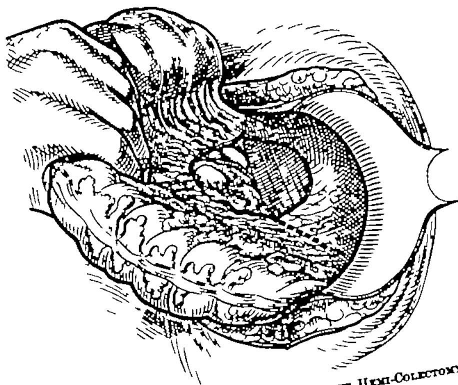


Fig 158.—Cancer of the Cæcum Right Hemi-Colectomy

Separation of the colon from the parietal layer of the peritoneum on the right side The vessels and the hypertrophied mesenteric glands are seen.

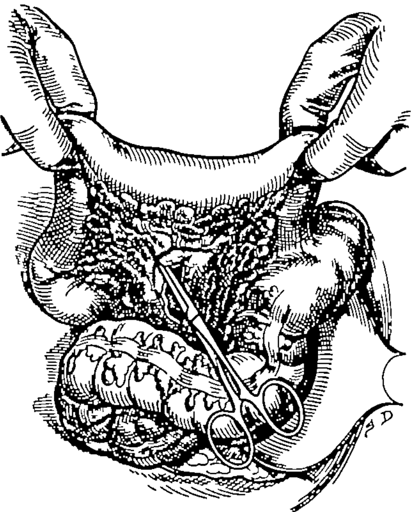


Fig 163.—Cancer of the Cæcum Right Hemi-Colectomy
Hæmostasis of the mesentery Note the fatty infiltration of the mesentery (fat patient)

Fig 164.—Cancer of the Cæcum. Right Hemi Colectomy
Freeing the hepatic flexure. The dotted line indicates the line of section of the parietal peritoneum. This incision prolongs the separation of the serous coat of the peritoneum from the colon

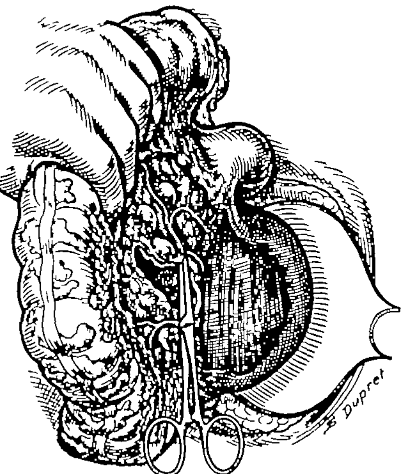


FIG 161.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY
Hæmostasis of the meso-colon above the glandular mass, which must be removed.

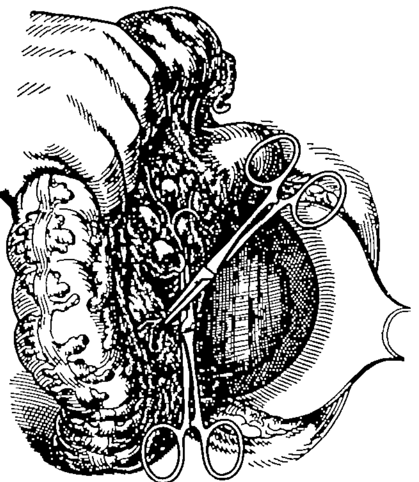


FIG 162.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY
Hæmostasis of the meso-colon completed.

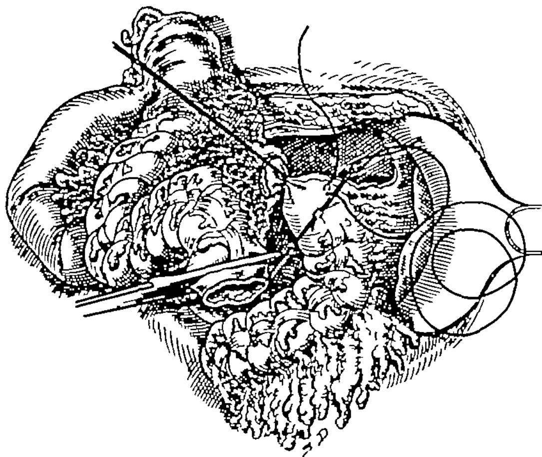


FIG 167.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

Preparation of the purse-string suture with slowly absorbable catgut 000. This suture can be applied without previous ligature (Thierry de Martel) to avoid the closed cavity

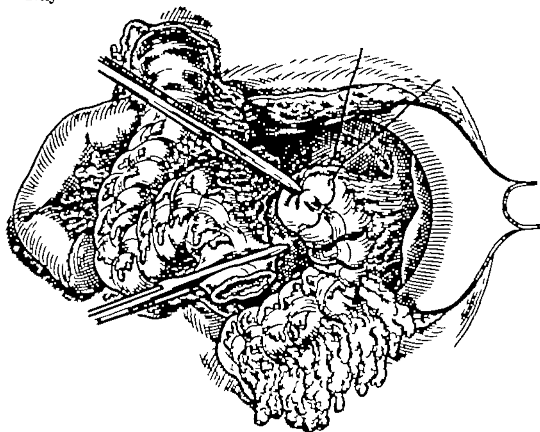


FIG 168.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

Burying the stump of the colon, which ought to be very small. Crushing causes it to dwindle quickly

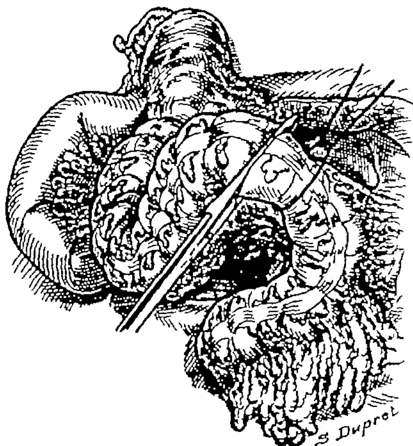


FIG 165.—CANCER OF THE CÆCUM. RIGHT HEMI-(
Ligature of the transverse colon with a firm thread and

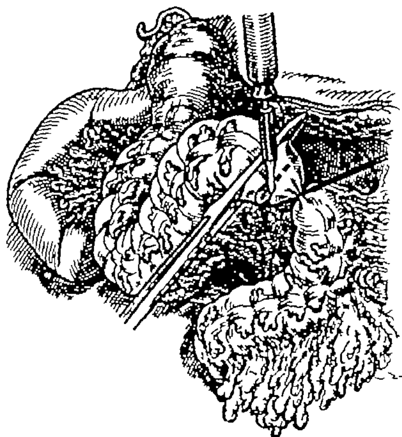


FIG 166.—CANCER OF THE CÆCUM RIGHT HEMI-COLECT(
Division of the colon with the thermo-cautery beyond the crushed

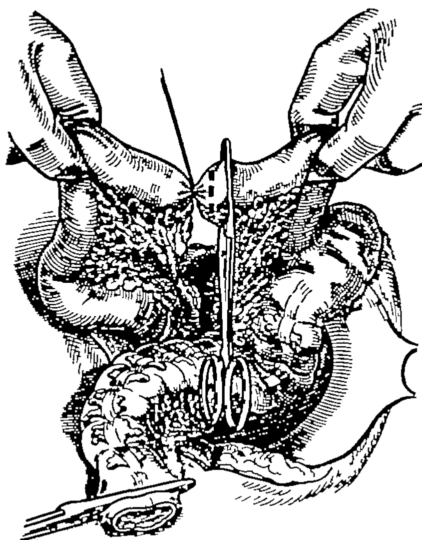


FIG 170.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

Division of the ileum after ligature.

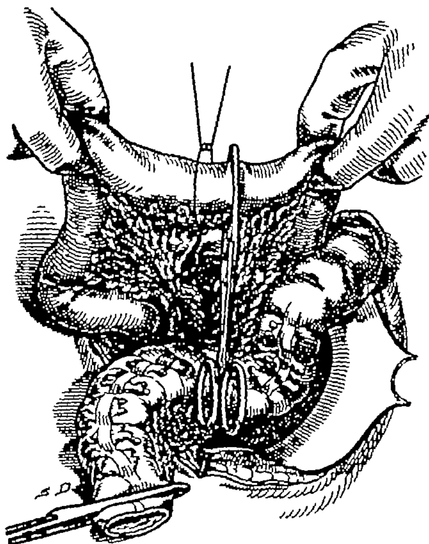


FIG 169.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

Division of the small intestine about 15 centimetres from the cæcum. This division oug generally to be some distance from the cæcum because of the glandular exter of the ileo-cæcal region.

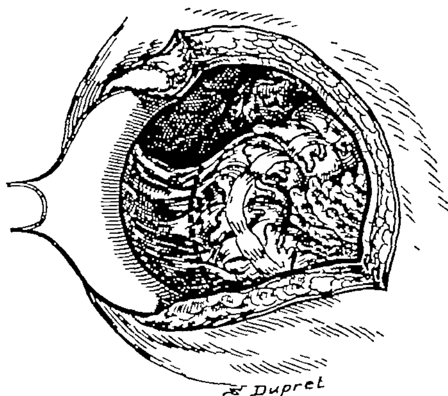


Fig 173.—Cancer of the Cæcum. Right Hemi-Colectomy

Division of the colo-sigmoidal band of Lane (left iliac fossa) This incision is of doubtful utility in the present case, where an ileo-sigmoidostomy is necessary but indispensable in cases of ileo-transversostomy

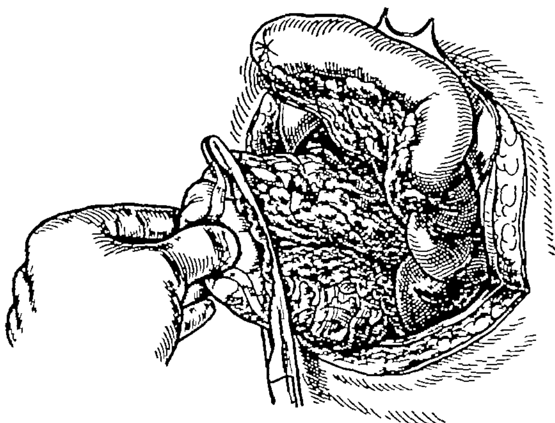


Fig 174.—Cancer of the Cæcum. Right Hemi-Colectomy

Side-side ileo-sigmoidostomy All the sutures should be made with slowly absorbable catgut 000 This procedure is inferior to end to-end or end-side ileo-sigmoidostomy but preferable in fat subjects, because the suturable serous surface of the intestine is decreased by the presence of the subserous fat. Although the sigmoid colon is empty of fæcal matter the gastro-enterostomy clamp placed on it serves to exteriorise it.

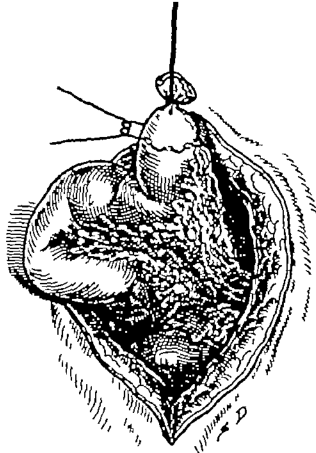


FIG 171.—CANCER OF THE CÆCUM RIGHT HEMI-COLECTOMY

Burying the stump of the ileum: it ought to be very small. The stump, crushed, tied and cauterised, is discharged very quickly The ligature can be dispensed with (Thierry de Martel.)

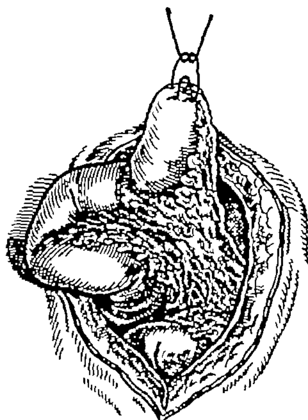


FIG 172.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

A stitch which must be applied exceptionally when the purse-string suture is insufficient.

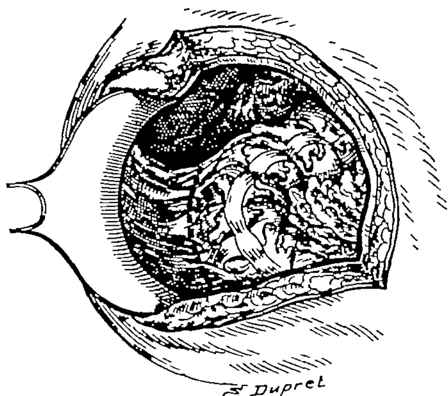


FIG 173.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

Division of the colo-sigmoidal band of Lane (left iliac fossa). This incision is of doubtful utility in the present case, where an ileo-sigmoidostomy is necessary but indispensable in cases of ileo-transversostomy

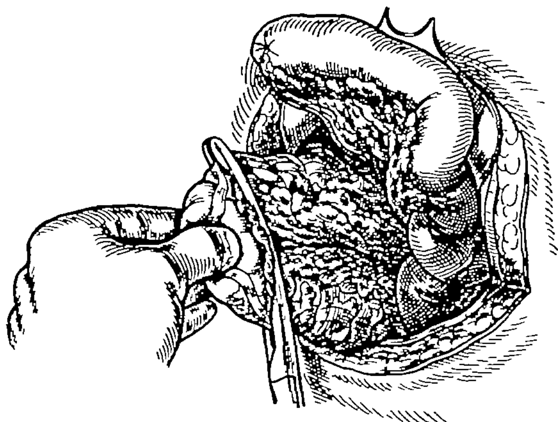


FIG. 174.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

Side-side ileo-sigmoidostomy All the sutures should be made with slowly absorbable catgut 000 This procedure is inferior to end to-end or end-side ileo-sigmoidostomy but preferable in fat subjects, because the suturable serous surface of the intestine is decreased by the presence of the subserous fat Although the sigmoid colon is empty of fecal matter the gastro-enterostomy clamp placed on it serves to exteriorise it.

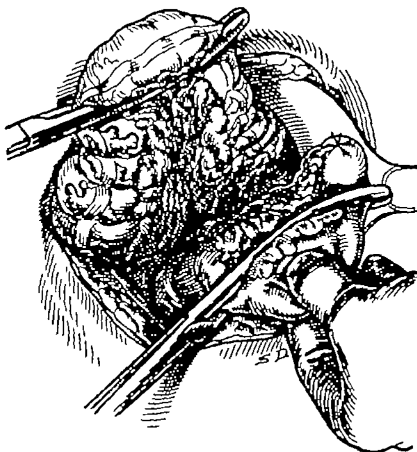


FIG 175—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

Side-side ileo sigmoidostomy The anastomosis should be made as near the cul-de-sac as possible to avoid elongation of the latter from peristalsis.

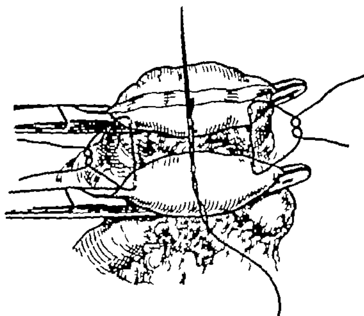


FIG 176.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

Side-side ileo-sigmoidostomy at three levels. Posterior sero-serous suture Three fixation sero-serous stitches with slowly absorbable catgut 000

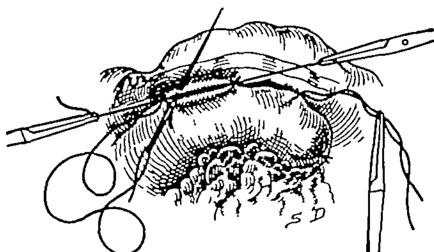


Fig 177 —Cancer of the Cæcum. Right Hemi-Colectomy

Side-side ileo-sigmoidostomy at three levels. Posterior suture to the serous surfaces. How the posterior continuous suture to the serous surfaces is applied. Here the anastomosis is not quite close to the cul-de-sac of the small intestine. The operator has been obliged to make it away from the closure by the purse-string stitch because of the size of a markedly fatty intestinal stump.

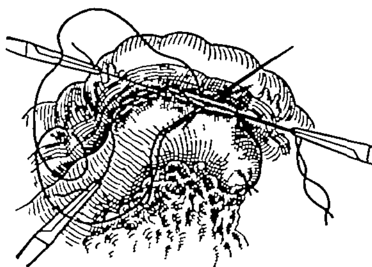


Fig 178.—Cancer of the Cæcum. Right Hemi-Colectomy

Side-side ileo-sigmoidostomy at three levels. Posterior continuous suture to the serous surfaces. The three levels are unnecessary if Connel and Cushing's (Vol. V) stitches be employed.

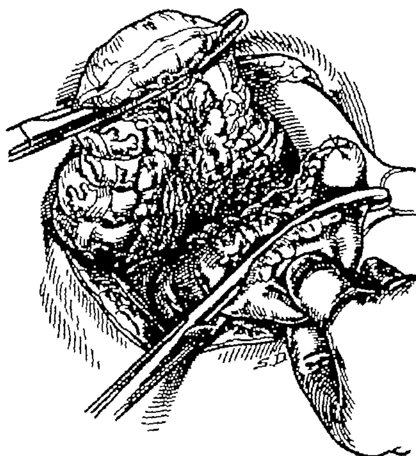


Fig 175.—Cancer of the Cæcum. Right Hemi-Colectomy

Side-side ileo-sigmoidostomy The anastomosis should be made as near the cul-de-sac as possible to avoid elongation of the latter from peristalsis.

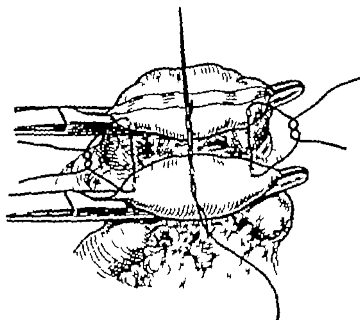


Fig 176.—Cancer of the Cæcum. Right Hemi-Colectomy

Side-side ileo-sigmoidostomy at three levels. Posterior sero-serous suture Three fixation sero-serous stitches with slowly absorbable catgut 000

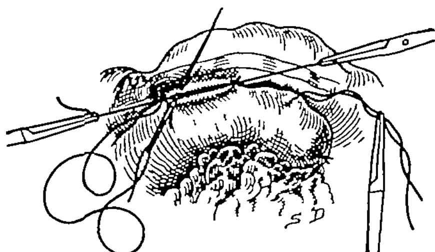


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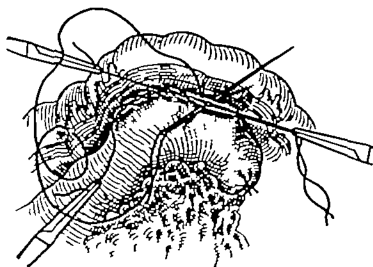


Fig 178.—Cancer of the Cæcum. Right Hemi-Colectomy

Side-side ileo-sigmoidostomy at three levels. Posterior continuous suture to the serous surfaces. The three levels are unnecessary if Connel and Cushing's (Vol. V) stitches be employed.

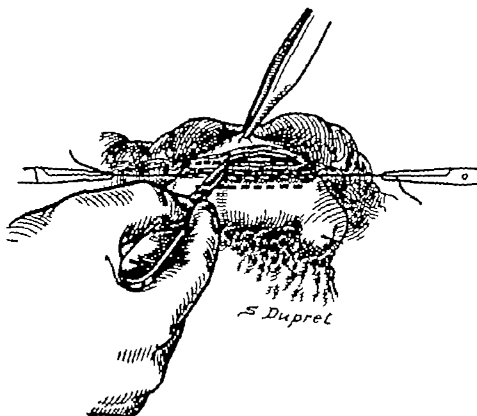


FIG. 179.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

Side-side ileo-sigmoidostomy at three levels. Incision of the sero-muscular tunic. The three levels are unnecessary if Connel and Cushing's (Vol. V) stitches be employed.

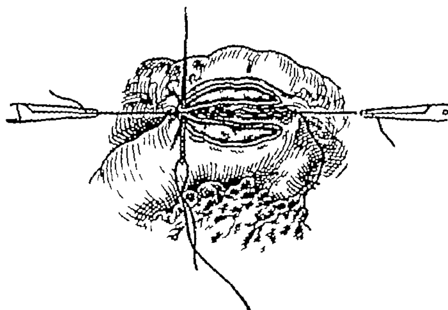


FIG 180.—CANCER OF THE CÆCUM. RIGHT HEMI COLECTOMY

Side-side ileo-sigmoidostomy at three levels. Suture of the sero-muscular edge The three levels are unnecessary if Connel and Cushing's (Vol. V) stitches be employed.

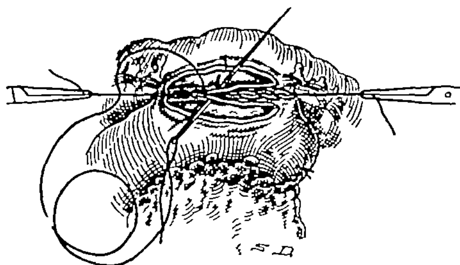


FIG. 181 —CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

Side-side ileo-sigmoidostomy at three levels. Posterior continuous suture of the sero muscular edge. The three levels are unnecessary if Connel and Cushing's (Vol. V) stitches be employed.

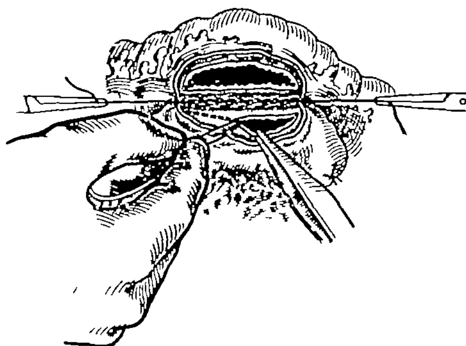


FIG 182.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

Side-side ileo-sigmoidostomy at three levels. Division of the mucosa. Rigorous aseptic precautions should be taken; with lavage of the intestinal cavities with ether The three levels are unnecessary if Connel and Cushing's (Vol. V) stitches be employed.

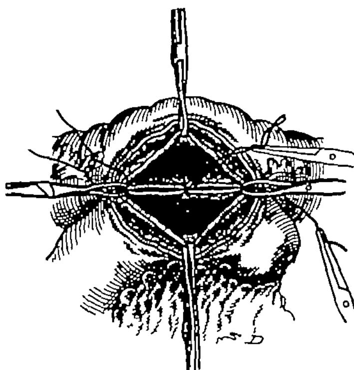


FIG 183.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

Side-side ileo-sigmoidostomy at three levels. Posterior continuous suture to the mucous surfaces. Fixation stitches to support the tissues.

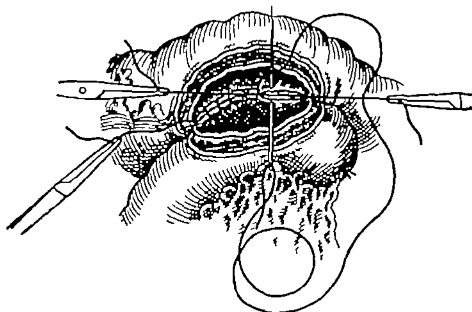


FIG 184.—CANCER OF THE CÆCUM RIGHT HEMI-COLECTOMY

Side-side ileo-sigmoidostomy at three levels. Posterior continuous suture to the mucous surfaces with button hole stitches.

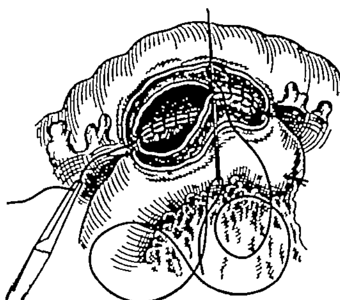


FIG 185.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

Side-side ileo-sigmoidostomy at three levels. Anterior suture of the mucous surfaces with button hole stitches. Connel and Cushing s stitches are preferable (Vol. V).

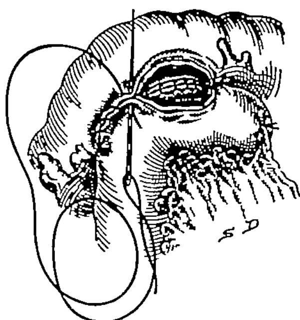


FIG 186.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

Side-side ileo-sigmoidostomy at three levels. Continuous suture of the sero-muscular edge Connel and Cushing s stitches are preferable (Vol. V).

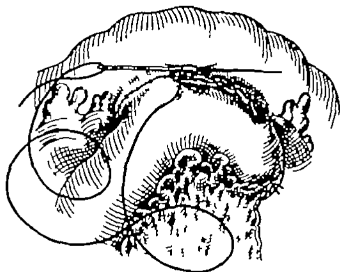


FIG 187.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

Side-side ileo-sigmoidostomy at three levels. Anterior suture to the serous surfaces. Cushing's stitch. In order to make this stitch the operator should change his gloves and instruments, wash the intestine with ether and paint the line of the subjacent *suture with tincture of iodine.*

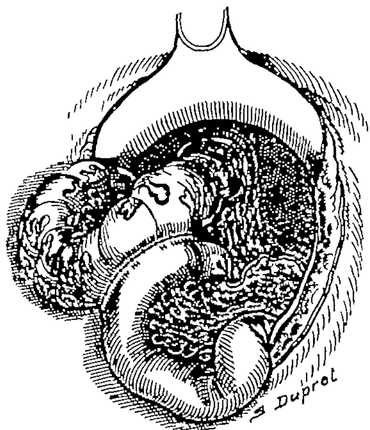


FIG 188.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

Side-side ileo-sigmoidostomy is finished. Note Cushing's stitch makes the suture invisible (Vol. V).

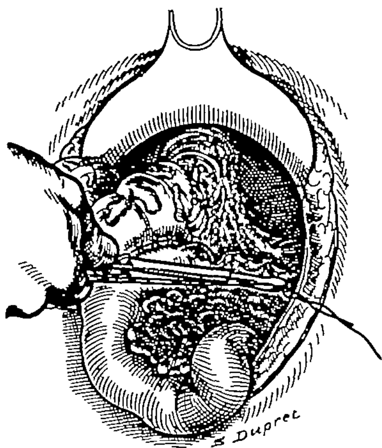


Fig 189 —Cancer of the Cæcum. Right Hemi-Colectomy

Suture of the edge of the mesentery with the meso-sigmoid to avoid internal strangulation.

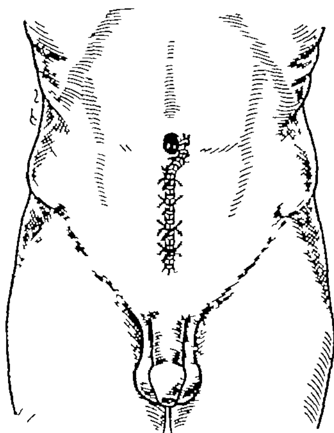


Fig 190 —Cancer of the Cæcum. Right Hemi-Colectomy

Closure of the abdomen.

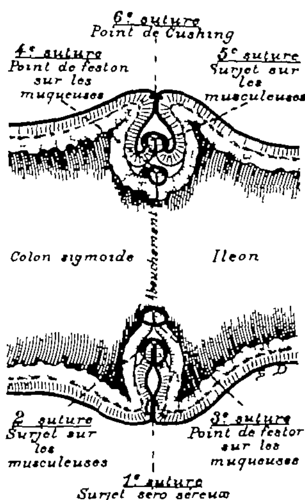


FIG 191 —CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

End to-end ileo-sigmoidostomy at three levels (see Fig 193). Drawing of the intestinal suture. Connel and Cushing's stitches are preferable.

6e suture Point de Cushing=6th suture Cushing's stitch. *4 suture : Point de feston sur les muqueuses*=4th suture Button-hole stitch of the mucosa. *5e suture : Surjet sur les musculeuses*=5th suture Continuous suture of the muscular layer *Colon sigmoïde*=Sigmoid colon. *Abouchement*=Anastomosis. *Iléon*=Ileum. *2e suture Surjet sur les musculeuses*=2nd suture Continuous suture of the muscular layer *3e suture : Point de feston sur les muqueuses*=3rd suture Button-hole stitch of the mucosa. *1 suture Surjet séro-séreux*=1st suture Continuous suture of the serous surfaces.

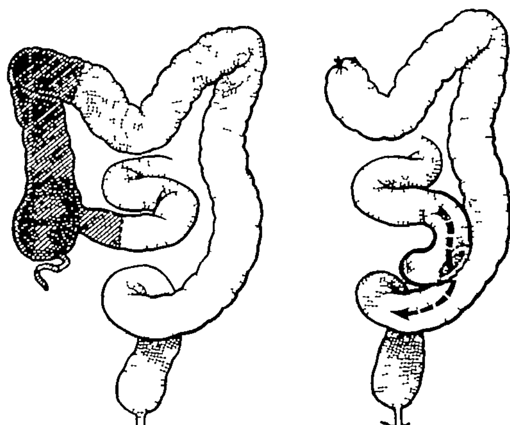


FIG 192.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

Drawing of the completed operation with side-side ileo-sigmoidostomy

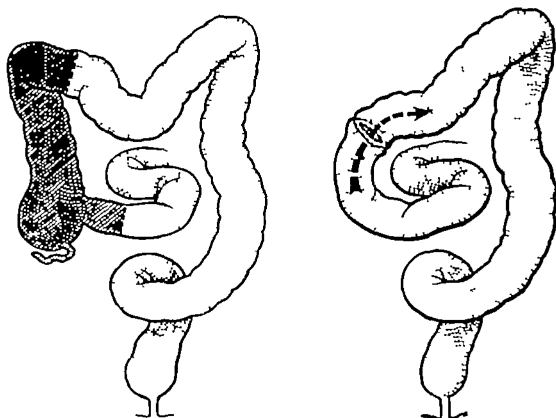


FIG 193.—CANCER OF THE CÆCUM. RIGHT HEMI-COLECTOMY

The same operation as performed according to the preceding figures, but followed by end to-end ileo-sigmoidostomy This last procedure is the method of choice but it ought only to be employed in patients who are not fat, because end to-end suture of the fatty intestine creates additional risks (see Fig. 191).

VII

ILIAC ANUS

An iliac anus is indicated in the following affections cancer of the rectum, serious recto-sigmoiditis, recto-vaginal or recto-vesical fistula etc and every time it is necessary to deal with a recto sigmoidal obstruction, or divert the fæcal matters to prepare for an aseptic operation, to close a fistula, or to heal a rectal ulceration.

The anus may be temporary or permanent

The surgeon who makes an iliac anus must remember it ought to be continent and exclusive

The anus ought to be continent, which partly does away with its inconveniences The end is in part obtained when the intestine is brought through the separated fibres of the rectus or of the internal oblique, and when the patient takes the trouble to educate his new anus

François technique produces absolute continence, but it is difficult I describe here the simpler method

The anus ought to be exclusive—*i.e*, remove completely the fæcal matters. When it is made for a vesical or for a vaginal fistula it prevents the discharges and the flatus from passing into the vagina or into the bladder, in cases of recto-sigmoiditis and of painful cancer, complete derivation of discharge produces cessation of the pains.

If the anus is to be temporary the operator so prepares the intestine that radical cure is possible afterwards this secondary operation is not serious and is certainly efficacious

If the anus be a preliminary, and precede an abdomino-perineal exeresis of the rectum it must be so arranged that complete exeresis of the inferior end is not impossible

In Vol. I of Practical Surgery Illustrated" we have indicated the procedure for an artificial anus which assures continence But if it be easy to obtain in still resistant thin subjects, with supple bellies it becomes more difficult and the operation more serious in cachectic or fat patients We believe also, it is preferable to recommend simple procedures the results of which are nearly always satisfactory The majority of our patients wear no apparatus

We shall describe the creation of an artificial anus for cancer of the rectum

The most radical method of treatment of rectal cancer at the present time is abdomino-perineal exeresis performed about six weeks after an application of radium. This method, combining two routes, gives, without doubt, better after results than the perineo-sacral route It has the fault of being more serious in its immediate results This gravity is more accentuated in fat subjects who have passed sixty years of age, and in men

Examination of statistics shows women support better the shock of the operation and the immediate results of this vast destruction. There is more chance of success in a woman for adherent cancer necessitating complementary removal of the uterus than in a man for a small mobile or slightly adherent tumour

Whenever a serious operation, whatever it may be, is necessary, we must endeavour to diminish the risks, it is often necessary to perform *the above operation in two stages—i.e an iliac anus, followed* by the radical operation seven to eight weeks later, and that for many reasons which I propose to mention The first is removal of stercoræmia, the arrest of infection of the tumour by the discharges, and the diminution of the hæmorrhagic and purulent discharge, all causes which weaken the patient The second is, the application of radium is made easy or simply more possible The third reason is that it is imprudent to add, at the same time in a patient already feeble, the exhaustion of what may be a complicated colostomy to that of an intervention so grave as abdomino-perineal amputation of the rectum. This in many cases is not so important a reason, because to make an iliac colostomy is often an easy operation, but slight complications can arise, such as the fistula may functionate badly, the parietal wound may become infected, the end of the colon may retract into the abdomen, or stenosis of the opening from the cutaneous cicatrix may occur In some cases again the operation for an iliac anus is difficult and necessitates as every operation a strict technique

Therefore at the present time we habitually obey the following rule for cancer of the rectum permanent iliac anus fifteen days after, application of radium and six weeks after the latter, removal of the rectum in all, two months

If the functional result is not perfect and if life is likely to be considerably prolonged, it is easy to carry out a useful "trimming up" *operation*

We only know two simple procedures

That of Mavdl Reclus which consists in exteriorising the left loop of the colon through a muscular and cutaneous button hole incision and maintaining it outside by a rigid rod passed into the meso-colon

That of Jeannel, who replaces the rigid rod by a cutaneous bridge

In both it is the muscular button hole opening in the internal oblique and in the transversalis which plays the part of the sphincter

Employ one or the other method according to the case For surgery of the artificial anus as for all intestinal surgery there is a surgery for thin and one for fat people On the other hand, the patient may be suffering from obstruction or not In these cases—

(*a*) If the patient be fat, or obstruction be present the most simple and rapid procedure should be employed—viz., Reclus method

(*b*) If the patient be thin, and there be no obstruction the procedure of Jeannel, perhaps a little less simple and quick, should be carried out

1 **Reclus' Method.**—We will not go into details regarding the technique, which is known to everyone The operator makes a McBurney s incision on the left side, looks for the loop and exteriorises it, he passes into the meso-colon a glass rod, or a paddle, or a stiff drainage-tube which keeps the tube outside Personally we use as a rigid rod, an instrument like a paddle consisting of two metallic tubes fitting into each other, which allow of regulating the length and of simplifying the manipulation. No suture is required the cutaneous wound is contracted by some clips

The intestine is punctured by the thermo-cautery, some hours later or the day after for the passage of flatus, some days later it should be divided more widely or completely for the regular discharge of the evacuations

The rigid rod ought to remain in position twelve to fifteen days to ensure the formation of a spur

2. **Jeannel s Method**—TECHNIQUE —The adjoining figures will make the technique of this also very simple and very rapid procedure easily understood.

(*a*) Incision of the skin like an Ω in the left iliac fossa Note that the small middle cutaneous flap ought to be about 3 centimetres long and 2 centimetres broad Dissect and turn it outwards, keeping on its deep surface 1 centimetre of cellular and fatty tissue to ensure a good blood supply

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The most radical method of treatment of rectal cancer at the present time is abdomino-perineal exeresis performed about six weeks after an application of radium. This method, combining two routes, gives, without doubt, better after results than the perineo-sacral route It has the fault of being more serious in its immediate results This gravity is more accentuated in fat subjects who have passed sixty years of age, and in men

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Whenever a serious operation, whatever it may be, is necessary, we must endeavour to diminish the risks, it is often necessary to perform the above operation in two stages—*i.e* an iliac anus followed by the radical operation seven to eight weeks later, and that for many reasons which I propose to mention The first is removal of stercoræmia, the arrest of infection of the tumour by the discharges, and the diminution of the hæmorrhagic and purulent discharge, all causes which weaken the patient The second is, the application of radium is made easy or simply more possible The third reason is that it is imprudent to add, at the same time, in a patient already feeble, the exhaustion of what may be a complicated colostomy to that of an intervention so grave as abdomino-perineal amputation of the rectum This in many cases is not so important a reason, because to make an iliac colostomy is often an easy operation, but slight complications can arise such as the fistula may functionate badly, the parietal wound may become infected, the end of the colon may retract into the abdomen or stenosis of the opening from the cutaneous cicatrix may occur In some cases again the operation for an iliac anus is difficult, and necessitates as every operation a strict technique

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The *rigid rod ought to remain in position* twelve *to* fifteen days to ensure the formation of a spur

2 **Jeannel's Method**—TECHNIQUE —The adjoining figures will make the technique of this also very simple and very rapid procedure easily understood

(*a*) Incision of the skin like an Ω in the left iliac fossa Note that the small middle cutaneous flap ought to be about 3 centimetres long and 2 centimetres broad Dissect and turn it outwards keeping on its deep surface 1 centimetre of cellular and fatty tissue to ensure a good blood supply

(*b*) Incision of the *aponeurosis of the external* oblique in the direction of its fibres, the incision ought to be long, at least 7 centimetres, not to hinder the manipulations or run any chance of secondary strangulation of the exteriorised loop, from the inelastic fibrous tissue

(*c*) Transverse separation of the fibres of the internal oblique and of the transversalis, as for the removal of an appendix

(*d*) Opening the peritoneum also in the transverse direction

(*e*) Exploration for and exteriorisation of the sigmoid loop If it *does not come easily, examine the external* surface of the meso-colon and expose one or more bands which go from the meso-colon to the iliac wall. Divide them by the point of the knife or by small cuts with the scissors, and the meso-colon is easily drawn upon We cannot insist too much on this point of the technique which always makes exteriorisation of the anus possible

(*f*) Once the loop is exteriorised, look where the anus should be made and to do this, draw on the upper end of the intestine so long as it can be brought up easily The anus should be situated in *this place*

(*g*) After having marked out the desired segment, perforate, preserving the vascular arches the intestinal edge of the meso-colon below this point, by blunt forceps from within outwards, seize with the forceps the cutaneous flap, and draw it through the opening in the meso-colon, suture the free edge of the flap by three interrupted stitches to the opposite edge of the wound

(*h*) Suture neither the intestine nor the different layers of the abdominal wall. Bring together above and below the cutaneous wound *by some stitches Do not contract the cutaneous opening* too much the loop must move easily, the muscles form the new sphincter and not the skin, on the other hand, the cutaneous orifice will become narrower by the formation of a cicatricial ring at the junction of the cutaneous surface and of the intestinal mucosa

AFTER CARE —Directly the patient is troubled by gas, puncture the loop with the thermo-cautery Make the patient drink abundantly, but very little food should be given for the first days

When should the Intestine be Completely Divided ?—As late as possible, but not after eight or ten days If it be possible to wait this length of time the cutaneous wound has had time to cicatrise, and discharge of the evacuations will not produce local infection This may appear a very long time but we may remark on the one hand

we have to deal decisively with a patient without obstruction, and on the other, if the intestine be not too constricted the gas and even the evacuations can continue, to a certain extent, to circulate in the loop, and to reach the rectum, to be discharged by the natural passages

It is not necessary, before cutting the loop of the colon to exceed eight or ten days We have remarked, in some favourable cases, when we have opened the anus on the twelfth day re-establishment of the intestinal circulation had been difficult to produce This should at first be assisted by injections into the upper end then by slight purgation Once the patient is cured by this operation, he must be educated to make the colostomy relatively continent To do this, every day at the same hour, the patient should have a small injection into his new anal orifice, and should endeavour to retain it as long as possible by contracting the wall, and assist, if required, by his hand and by a tampon to close the orifice It is rare in six weeks or two months for the function not to be regulated satisfactorily

COMPLICATIONS —We will only speak of those inherent to this procedure They are few in number

The wound, as a result of premature opening of the intestine, can become infected and the sutures become lax, the cutaneous bridge may then yield The wound must be carefully cleaned many times a day It should be separated as far as possible from the discharges by a fatty body as, especially collargol ointment, and healing of the wound by granulation should be awaited The result is less sightly

If the cutaneous wound has contracted too much, the intestine may be strangulated and not allow the evacuation of the bowel This complication which we have met with once, has compelled us to explode the cutaneous bridge If the intestine be working well, and if the division of the colon be not made before eight days these accidents do not occur

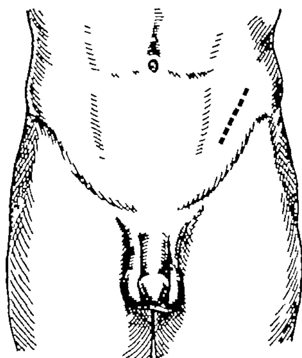


FIG 104—LEFT ILIAC ANUS.
Incision of the skin corresponding to McBurney's incision on the right.

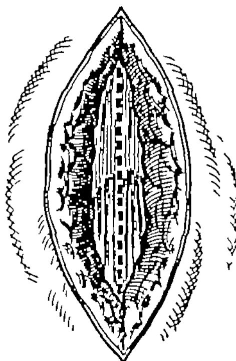


FIG 105—LEFT ILIAC ANUS.
Separation of the muscles and aponeurosis at the first level.

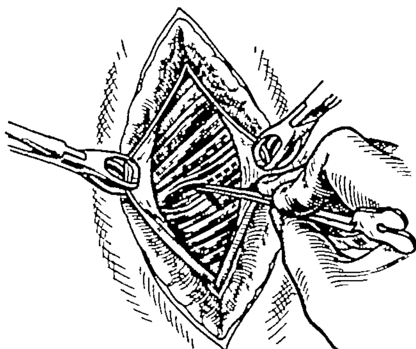


Fig 106.—Left Iliac Anus.
Separation of the oblique muscles

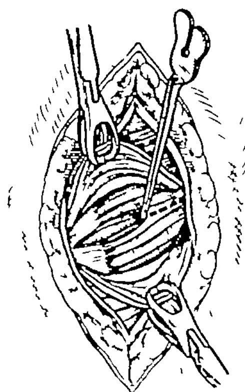


Fig 107.—Left Iliac Anus.
Separation of the transversalis

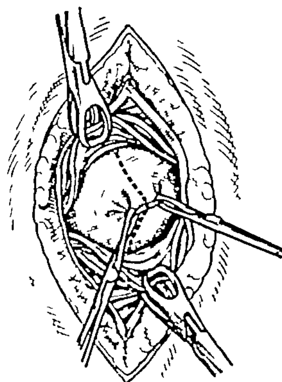


Fig 108.—Left Iliac Anus
Opening the peritoneum.

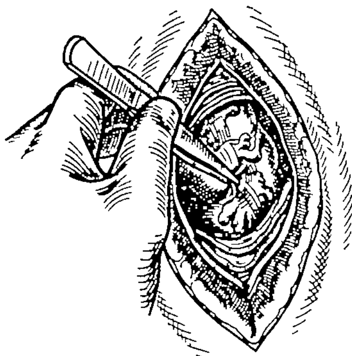


Fig 199 —Left Iliac Anus.
Exploration of the sigmoid.

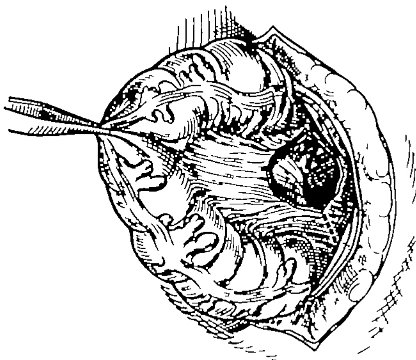


Fig 200 —Left Iliac Anus.
Peritoneal band, divided to mobilise the loop which could not be drawn sufficiently outside the abdomen.

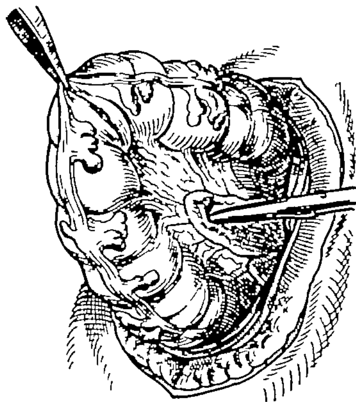


FIG. 201.—LEFT ILIAC ANUS.
Opening an arterial space in the meso-colon.

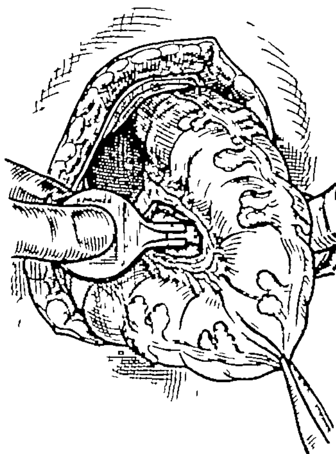


FIG. 202.—LEFT ILIAC ANUS.
Introduction of a piece of the metallic paddle

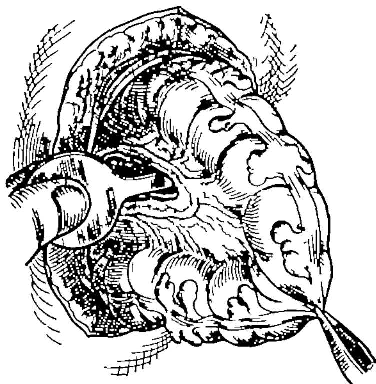


FIG 203—LEFT ILIAC ANUS.
Introduction of a second piece of the metallic paddle.

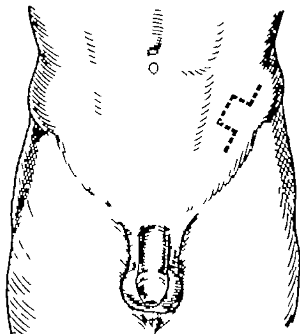


FIG 204—LEFT ILIAC ANUS.
The best cutaneous incision for artificial anus.

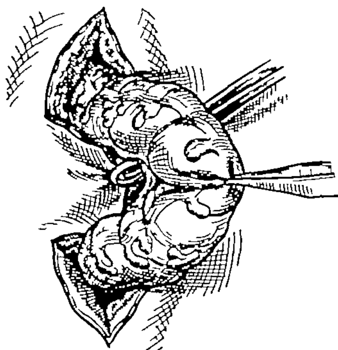


Fig 205.—Left Iliac Anus.

Tissue forceps draw the cutaneous bridge into the opening in the meso-colon

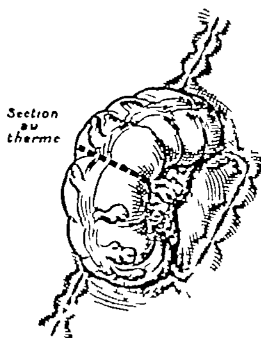


Fig 206.—Left Iliac Anus.

Appearance of the abdominal wall some days after the operation. The stitches have been withdrawn. The operator has punctured the intestine for the passage of flatus. The colon should be completely divided only at the end of eight or ten days

Section au thermo=Division by the thermo-cautery

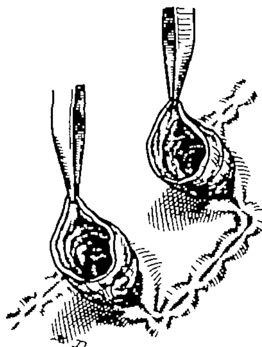


Fig 207.—Left Iliac Anus.

Appearance of the ends of the colon after division by the thermo-cautery



Fig 208.—Left Iliac Anus.

Appearance of the ends of the intestine six weeks later

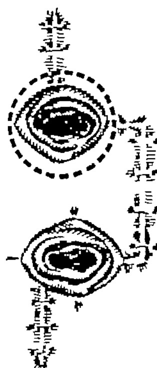


Fig 209.—Left Iliac Anus.

Suppression of the terminal end of the colon during abdomino-perineal amputation of the rectum.

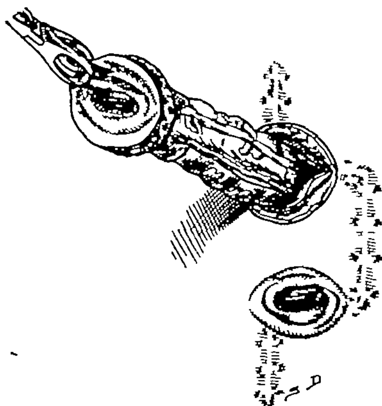


FIG. 210.—LEFT ILIAC ANUS.
How the sigmoid and rectum are separated.

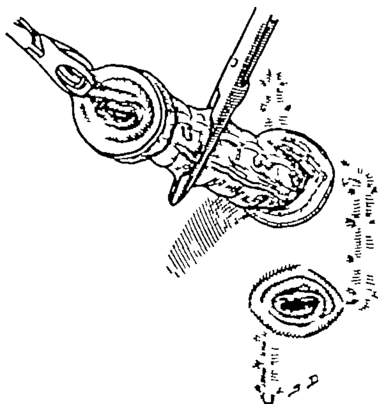


FIG. 211.—LEFT ILIAC ANUS.
Crushing the intestine

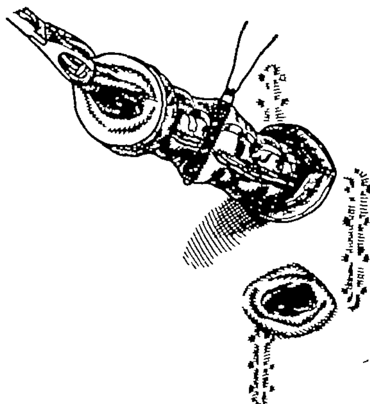


FIG 212.—LEFT ILIAC ANUS.
Ligature of the crushed portion.

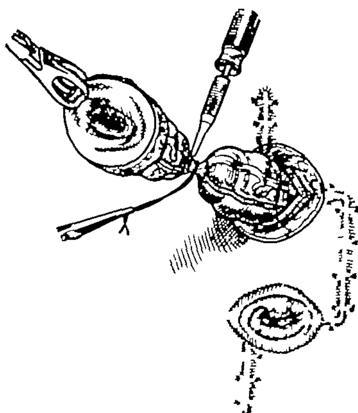


FIG 213.—LEFT ILIAC ANUS.
Division of the intestine by the thermo-cautery

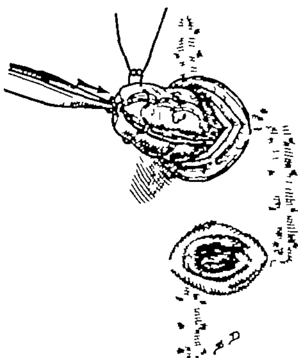


Fig. 214.—Left Iliac Anus.
Burying the stump of the colon.

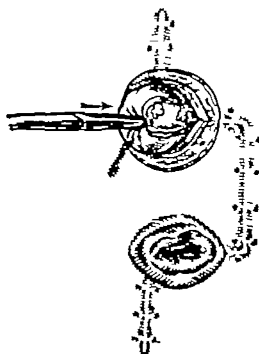


Fig. 215.—Left Iliac Anus.
Replacing the intestine into the abdomen.

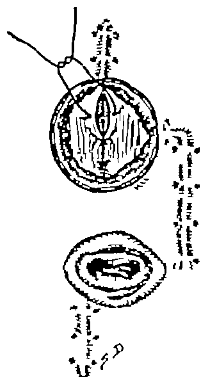


Fig. 216.—Left Iliac Anus.
Closure of the abdominal wall by two catgut sutures.

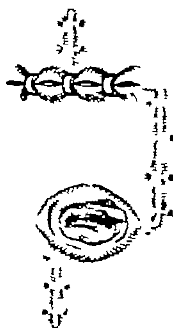


Fig. 217.—Left Iliac Anus.
Suture of the skin.

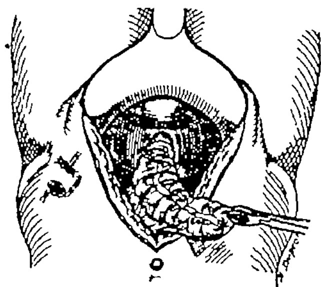


FIG 218.—RESULT OF SECONDARY ABDOMINO-PERINEAL AMPUTATION BY THE MEDIAN INCISION

VIII

GRAVE FORMS OF COLITIS

OBSTINATE inflammations of the colon are said to be grave, to distinguish them from muco membranous colitis which is mild in character

Grave colitis seriously endangers the health and even the life of patients from the abundant and repeated hæmorrhages, from the muco-purulent discharges, and from the general symptoms they produce

Endoscopy may show an ulceration of the mucosa some mucous polypi, or an infiltration of the intestinal walls, which contracts the lumen

Palpation, radioscopy or laparotomy reveals sometimes inflammatory tumours and stenosis simulating cancer and giving rise to obstruction Intestinal perforations can produce peritonitis peri-colic abscesses, and fistula between the colon and the bladder, the vagina and the skin and create painful infirmities All these pathological states necessitate on many occasions, surgical treatment

What is the cause of these grave colites ?

Ulcerative colitis may be due to amœbic or bacillary dysentery, to parasitic affections, lamblia, trichomonas etc to a secondary microbic infection, to a typhoid or to a para typhoid fever, to an intoxication diabetes, gout, arsenic mercury etc

Recto-colitis may be partial or complete, according to its extent It is nearly always partial, and nearly always localised in the sigmoid, it is nearly always sigmoiditis If Bensaude and Antoine* have rightly qualified it as recto-colitis, it is because the lesions often extend to the upper part of the large intestine or encroach on the upper part of the rectum

According to their anatomical conditions and clinical appearances, grave colites can be divided into many groups

(a) Hæmorrhagic purulent form (Bensaude and Antoine) in which mucus pus, and blood are chiefly evacuated

* "Les Colites et les Recto-Colites Graves non Dysentériques," by E Bensaude and Ed Antoine (*Gazette des Hôpitaux* February 28, 1920)

(*b*) Stenotic or pseudo-cancerous form, with hypertrophy of fibrous tissue, a true inflammatory tumour of the colon It is probable this form may result from the preceding ulcerative form, or follow diverticulitis

(*c*) Polypoid form, in which the intestinal mucosa is covered with polypi, analogous to the villous tumours of the bladder

(*d*) Peritoneal *form*, which *especially* affects the serous coat and which is most often consecutive to a diverticulitis—*i.e.*, to inflammation of the diverticula, to hernias of the mucosa, dis seminated on the surface of the sigmoid and of the descending colon

I **Hæmorrhagic, Purulent Recto-Colitis** —This form is met with especially in adults It generally begins suddenly, with fever, with *symptoms of indigestion or poisoning* from an error of diet It is associated or alternates with hæmorrhage and suppuration The patient passes with the motions or between times a more or less large amount of yellowish or greyish fæcal matter, streaked with blood These are the streaked evacuations The odour is fœtid, slight abdominal pain may accompany the motions, with an im perious need to go to stool Sometimes there is a spontaneous, *painless evacuation, like evacuating 'sputum'* (Mathieu) The patient expels sero-purulent liquid thinking he is passing flatus The evacuations are as frequent in the night as in the daytime, and may vary from four to twenty per day

Sometimes the hæmorrhage is so considerable that it dominates the scene and is the only thing to draw the patient s attention At other times suppuration is in the ascendant The pus may be yellow or grey, and its quantity sometimes suggests evacuation of a peritoneal abscess

Independently of the alteration of the stools, other variable gastro-intestinal *symptoms are observed the stools are some-*times regular and normal in appearance, sometimes the patients are constipated, sometimes on the contrary, they suffer from diarrhœa, and in these cases *the fæcal matter is intimately mixed* with blood, pus and mucus

Examinations of the motions, after a test meal give results which differ according to the extent of the lesions *The composition of the motions is* normal, when the lesion is situated on the terminal part of the intestine otherwise it denotes faulty digestion of different *foods* Intact muscular fibres, fats and carbohydrates in abnormal *quantity* are observed in the stools

Pain —It may be absent, generally patients complain of a feeling of pain and intestinal borborygmi preceding the discharge of blood, of pus or of flatus, between these evacuations there is generally no painful sensation, sometimes the pains are dull, dragging, or heavy, around the umbilicus, with a sensation of constriction in the transverse colon, or in the left flank, or in the left iliac fossa These pains may be exaggerated on standing up, on walking, and on exercise If the rectum be affected, there is a feeling of heaviness in the perinæum, with tenesmus and straining

General Signs —Sometimes the general condition is good, sometimes altered, during subacute attacks there are signs of intoxication and of infection nausea, vomiting, cold sweats, cutaneous hyperæsthesia somnolence, anxiety state, headaches, fever, oliguria, wasting, pale, discoloured face and asthenia, symptoms following every chronic toxic infection of intestinal origin. Examination of the blood shows anæmia and a marked diminution of hæmoglobin Slight leucocytosis without eosinophilia, is frequent

Physical Signs —The abdomen is normal in appearance, but is often flat or depressed Palpation may evoke pains along the colon, which, if spasm be present may be perceptible as a cord. Rectal examination is sometimes painful, but generally reveals nothing, the mucosa is sometimes œdematous less supple, or scattered with small granules, giving the impression of sand (granular rectitis)

Radiological Examination —Sometimes the superior limit of the lesion in the colon can be localised The affected parts of the intestine do not keep contact with the opaque substance, as a result of hypersensibility of the mucosa of the colon (Stierlin) Shadows are found in the form of a veil or mottling along the intestine Analogous images have been described in dysentery by Florand and Bensaude with this difference the lesions are generally less marked The method of penetration of the opaque injection is altered It traverses the diseased parts quickly, without distending them, forming a thin sinuous riband, recalling the windings of a rivulet (Bensaude and Antoine) *

The sigmoid flexure presents some alterations, it is contracted, and its edges parallel its opacity is less than that of the descending colon There may be a true solution of continuity between the rectum and descending colon These appearances, moreover do not always remain the same during examination

After an opaque meal, complete absence of the opaque substance

* *Loc. cit*

may be observed at the diseased parts, there may be a true lacuna or a slight shadow without niches and protuberances, often very narrow, and presenting mottling or deep lines

Rectoscopy.—Examination is difficult from the sensitiveness of the rectum and of the colon and from spasm of the sphincter It is often a good thing to use cocaine either by peri anal or epidural injection, or simply by painting with a strong solution Two types of lesion are observed

(*a*) Congestive and hæmorrhagic lesions The mucous membrane is sensitive, and bleeds at the least touch, it is red and swollen and at no part normal in appearance It is dry and varnished, and from its red base a patch or hæmorrhagic shreds separate in places Sometimes it is covered by granulations some of which take the form of small, flat, and flabby buds or of true polypoid formations There are no erosions or visible ulcerations (Bensaude and Antoine) *

(*b*) Erosions and ulcerations They are observed on a simple inflammatory base, the mucosa is red, granular, œdematous or hæmorrhagic In amœbic dysentery, the mucosa presents a lunar appearance, with ulcerations in the form of a crater, a kind of substance with edges cut perpendicularly and often absent at the base, that two craters may be united by sliding a thread over the two bases of the ulceration

Evolution.—Progress is chronic the duration varies, with successive periods of aggravation and of amelioration. Remissions may be long Generally when improvement occurs it is ephemeral

Complications.—They are of an infectious nature or due to a mechanical cause

(*a*) *Infections*.—Anæmia is observed in the hæmorrhagic forms, cachexia in the purulent it arises from denutrition and absorption of the toxic products There are, in addition symptoms of supra renal insufficiency Sudden death polyarthritis, renal infarct, pulmonary embolism, polyneuritis, tetany, iritis, abscess in the wall of the colon purulent, plastic and generalised peri-colitis, with or without intestinal perforation, have been observed.

(*b*) *Mechanical*.—Progressive contraction of the intestine with resultant obstruction.

Diagnosis.—Begin by eliminating amœbic or bacillary dysentery The amœbæ should be looked for in the motions or in a specimen

* R. Bensaude Traité d'Endoscopie Recto-Colique, Rectoscopie Sigmoidoscopie. Masson. Paris, 1919

removed under endoscopy, it should not be forgotten they may be absent in the small piece of mucus examined, even when the intestine presents numerous lesions of amœbic dysentery, it should also be remembered the amœbic cysts are often difficult to identify Look for eosinophilia and for bacillary dysentery In this condition, at the height of the crisis, Sluga's Flexner's or Hiss bacillus is found in the motions Sero-diagnosis should be tested for with numerous specimens and a small fragment of the fæcal matters, to prevent errors due to coagglutinins Look, if need be, for the amboceptor (Bensaude and Antoine)

When the diagnosis of amœbic or bacillary dysentery has been eliminated, endeavour should be made to find out if the cause be not due to a tubercular fistula, to a pelvic abscess which has opened into the intestine, or to cicatricial or inflammatory contraction of the colon and rectum, in which the lesions have suppurated etc

II **Polypoid Colitis** —Multiple polyposis of the colon, or vegetant colitis is quite a special, curious affection, and not well known It occurs especially in young people and produces excessive hæmorrhage It does not produce pain like dysentery, but only hæmorrhages, consisting of red blood The sigmoidoscope alone permits of a diagnosis It shows readily small buds covered with mucus, true polypi, we show a specimen on which we operated (Fig 223) These tumours may be innocent in the sense that they do not show any cancerous elements, but they are nevertheless serious from the hæmorrhages they provoke They can undergo cancerous degeneration, or at least exist with cancer This process has a tendency to be generalised in the whole of the colon In the case of which we produce a specimen an artificial anus had been made on the left side to divert the fæcal matters, but the polypoid process continued to spread not only at the anus where the polypi protruded, but on the descending colon itself above the anus

III **Pseudo-Cancerous Form with Stenosis.**—This form has been described separately by Bensaude and Antoine *

We think most often it is the result of the preceding forms having produced a subperitoneal inflammatory reaction or after diverticulitis which we will study farther on

In a nervous adult person more marked constipation and pain supervene These pains especially predominate in the left iliac fossa and in the pelvis Sometimes the attacks are accompanied

* *Loc. cit.*

by small intestinal obstructions, with *meteorism* The microscopic examination of the fæcal matters, after a test meal, shows the *digestion is normal*, which proves the small intestine does not partake in the production of the symptoms The duration lasts for years It progresses generally without fever, but the temperature may become elevated with successive rises, coinciding with the reactions of localised peritonitis Usually the general state is little affected, but at the end of some *years it is quite possible* for the patients to become so anæmic and thin that the presence of cancer *suggests itself* As the lower part of the rectum is intact, examination by the finger gives no information Rectoscopy is difficult, owing to alteration in the intestinal walls The first 10 centimetres of the rectum show no alteration in the mucosa, simply slight congestion, they present large folds and sometimes a few granulations

Infiltration of the deep layers (infiltrating sigmoiditis) contracts the intestinal lumen It hinders the passage of an instrument, which can only advance slowly and often insufflation is necessary, but these lesions never produce such a resistance to the progress of the instrument as that of cancer (Bensaude and Antoine)

IV **Peritoneal Form (Peri-Colitis and Diverticulitis)** —All forms of colitis may be complicated with peritoneal symptoms, *especially* those accompanied by inflammation of the fibrous tissue of the submucosa

The symptoms progress as in chronic appendicitis, but they occur in the left instead of in the right iliac fossa They may be confused with renal lithiasis abscess of the adnexa, localised tubercular peritonitis or suppuration following cancer of the sigmoid

Diverticulitis occurs in these forms

Diverticulitis is not a pathological rarity, but a frequent and often unrecognised morbid state

The clinician most often attributes the symptoms it evokes to the following conditions enteritis appendicitis intestinal tumour, salpingitis intestinal stricture etc

Diverticulitis is inflammation of a diverticulum of the colon Diverticula are frequent but they must be known to be looked for They form a series of small protrusions arranged at intervals along the colon *each side of the longitudinal* bands and often embedded in and hidden by the appendices epiploicæ

They arise from hernia of the mucous membrane, *which protrudes* between the muscular fibres of the middle tunic of the colon *Often*

the diverticulum is produced even in the substance of an appendix epiploica, externally, these small pockets form prominences varying from the size of a pea to that of a nut arranged at intervals along the colon on the last parts of the large intestine

Diverticula are met with on the whole digestive tract, from the œsophagus to the rectum, in the small intestine they cause no symptoms, and are discovered accidentally Practically speaking, only diverticula of the left colon need be considered, they only play a pathological rôle In the rest of the intestine, moreover, the contents are liquid and have no tendency to accumulate in the diverticula On the contrary, in the left colon (descending and sigmoid) the contents are solid and viscid, when the fæcal matters penetrate into the diverticula they remain there and become hardened, forming stercoral calculi These foreign bodies, if the orifice of communication with the intestine be only slightly closed infect and inflame the diverticulum as an appendix whose base is obliterated, in this case the rôle of the closed cavity is as deadly as in the cæcal appendix Abscess perforations, which may open into the peritoneum into the intestinal cavity, into the abdominal wall, into the bladder, or into the vagina, result In this way pelvic or abdominal abscesses, which end in stercoral fistula are formed, and this explains certain cases of perforating peritonitis which are wrongly attributed to the rupture of a Fallopian tube or of an appendix

Diverticula are most frequent on the pelvic colon It is there that complications usually occur

Diverticulum of the colon is not a congenital but an acquired formation It has nothing to do with Meckel s diverticulum, or with diverticula found in the duodenum or in the jejunum, it is a hernia of the mucosa produced from distension of the colon which results from constipation and chronic intestinal stasis It is possible large and frequent injections contribute to its formation In order that a diverticulum may be produced it is necessary on the one hand for the muscular coat of the intestine to be altered by chronic inflammation, and that it atrophy and on the other for pressure within the intestine to be increased for the mucosa to produce a hernia under the serous coat by passing through the muscular fibres

Complications of Diverticula —Ulcerations of the mucosa, abscess of the walls of the colon intestinal perforations followed by generalised peritonitis or by abscess of the pelvis stercoral

fistulæ which open into the vagina, into the bladder, or into the skin, new formations from chronic slow inflammation, canaliculated contraction of the intestine from narrowing of the walls of the colon or strangulation from the inflammatory fibrous tissue surrounding it, lastly, cancer of the colon engrafted on a chronically irritated intestine Such are the possible complications

I repeat, diverticula are frequent, to discover them when they exist, it is sufficient to think of them If, during a laparotomy the surgeon would take the trouble to examine the sigmoid and the descending colon, he would often see these culs-de-sac, with hard contents, arranged at intervals along the bands of the colon They vary in size from a pea to a nut

DIAGNOSIS OF DIVERTICULITIS —There is no syndrome proper to diverticulitis It should be thought of in all subjects from forty to sixty years of age in whom enteritis, tumour of the intestine, etc has been diagnosed Moreover, in a certain number of old, always constipated people, complaining of attacks of pain and of colic, palpation perceives at the time of the attack, a hard colon, increased in size this is pericolitis, due especially to a diverticulitis

In all patients with bowel complaints a radioscopic examination should be made of the complete intestinal digestion, this allows intestinal stasis or diverticula of the colon to be discovered

Diverticula are revealed by radiography, An opaque injection should be given When the pap passes an inflamed area there is to be noted, between two dilated parts of the colon, a channelled part, or even a lacuna, corresponding to the inflamed zone Nay, more, on each side of the contracted lacunary intestine some streaks are perceived, corresponding to diverticula filled with the opaque mixture Two or three days later when the intestine is quite empty and there is no trace of the barium, a second radiogram should be taken The diverticula at the contracted lacunary region still contain some of the opaque mixture, and appear as streaks round the intestine it is the best sign of a diverticulum

Pseudo-tumours of the colon are due to diverticulitis The mass is cylindrical, longer in an inflammatory tumour than in cancer, which is more circumscribed Progress is slower There is often sensitiveness on pressure The general state is good Examination of the stools does not usually reveal blood The size of the tumour may vary from one week to the other The slowness of the growth of the tumour the absence of blood in the stools, the slight elevation of the temperature in inflammatory cases, the examination of

the blood, which shows slight leucocytosis, are the signs which weigh in favour of a pseudo-tumour

Rectoscopy gives the following information In cases of tumours or in inflammatory contraction from pericolitis, the instrument comes across a more and more narrow canal without alteration of the mucosa The metallic tube is gradually strangulated by a contracted wall, which shows no ulceration or vegetation as exists in cancer

To make the diagnosis of diverticulitis, it is necessary to think of it in patients with enteritis, with suppuration in the pelvis, and in those in whom there is a tumour in the region of the colon

TREATMENT —Recto-colitis and grave colites are difficult to treat and to cure They are often improved by treatment, but nearly always recur

MEDICAL TREATMENT —Hygiene of ulcerative colitis Bodily and mental rest, very careful feeding, milk and vegetarian diet composed of food very finely strained leaving no waste, rice flour, oatmeal, wheat flour barley meal, pastes compotes preserves Constipation should be treated by mineral oil at each meal

DRUGS —Emetine in amœbic dysentery, chloride of calcium for hæmorrhage, belladonna for painful spasms To support the general health strychnine, serum, adrenalin

LOCAL TREATMENT —Begin by injections of isotonic lukewarm solutions under feeble pressure, the patient lying down, make use of a cannula with a double channel or of a rubber tube The injections should not pass very high, or provoke spasm, the liquid should be allowed to flow away and there should be no pressure Injections of bismuth of oil and of starch are useful Try also rectal dressings with gelatine, chloride of calcium, or oxide of zinc as a base

Electric Treatment —Ionisation diathermy

SURGICAL TREATMENT —The following are the cases in which the surgeon may intervene

(*a*) *Purulent Hæmorrhagic Form* —Hæmorrhage, suppuration, or pains produce symptoms of a chronic low infection and of progressive anæmia which alter the general state of the patient

If antecedent medical treatment does not succeed the first operation should be that of a cæcal fistula perform appendicostomy or colostomy The former has the advantage of not requiring a second intervention to close the fistula under local anæsthesia,

make a button hole incision in the right iliac fossa, as for an appendicectomy, bring up the appendix, divide the mesenteriole and the appendix 1 centimetre from its base and fix it to the skin, introduce a Nélaton s catheter by the appendicular canal, and once or twice a day give injections of nitrate of silver, 1 1,000 These injections of silver are *useful, but appendicostomy* does not alter the channel for the fæcal matters For this purpose it is better to perform a very large cæcostomy, so that all the discharges pass by the right side Personally, we prefer an anus of the transverse colon, which assures still more complete deviation of the intestinal contents and is less troublesome, for the discharges are less liquid and irritating, but its secondary closure is more diffi cult The closure of a cæcostomy is an insignificant operation, the closure of an anus of the transverse colon requires an end to-end suture, which makes the operation, if not more serious, at least more difficult

The counter anus ought to persist for some months otherwise recurrence will immediately supervene In order to remove the artificial anus or the fistula, the general health should have recovered endoscopy should reveal complete disappearance of ulcera tion, and there should be total absence of discharge and of colic, which shows that a prolonged cure can be relied upon A simple ileo-sigmoidostomy (short-circuit) between the ileum and the end of the sigmoid *has given us, in many cases, permanent cures*

(*b*) *Polypoid Colitis* —Deviation of the discharges should be tried first by a cæcal anus The specimen we show is the result of a colostomy made in such a case an iliac anus had been made and the polypoid process had continued It would have been better to make a cæcal anus or an anus of the transverse colon Moreover, the presence of a left iliac anus troubled us considerably in performing resection

(*c*) *Peritoneal Abscess* —The abscess may form round the colon, the result of a perforation of a diverticulum or from ulceration Treatment consists simply in an incision followed by drainage

The abscess may open spontaneously into the skin into the bladder or into the vagina If a fistula persist, what is to be done ? At first a counter-channel a cæcal anus, or better one in the transverse colon, nay even in the ileum Often this anus *is sufficient* to remove the suppuration and the fistula If the fistula persist, direct *operation should be performed* resection or closure of the intestine according as the intestinal wall does or does not

contain an undoubted group of diverticula, capable of producing new symptoms

The operation on a fistula includes therefore, three stages creation of an artificial anus, direct treatment of the fistula, closure of the anus

(*d*) *Inflammatory Tumours*—Resection of the morbid part, followed by end to-end suture or ileo sigmoidal anastomosis

The operation should be performed in one two or three stages, according to the local state and the general condition of the patient

(*e*) *Diverticulitis*—There is no treatment of diverticulitis, save only the treatment of the complications

A peri-colic abscess should be incised and drained, as an appendicular abscess

An inflammatory tumour should be treated by resection

Stercoral fistulæ, be they cutaneous vaginal, or vesical, should first be treated by a counter anus If this be insufficient, partial colectomy, as for a tumour, should be performed

Chronic intestinal obstruction should also be treated by resection after a temporary counter anus has been made above the stenosis

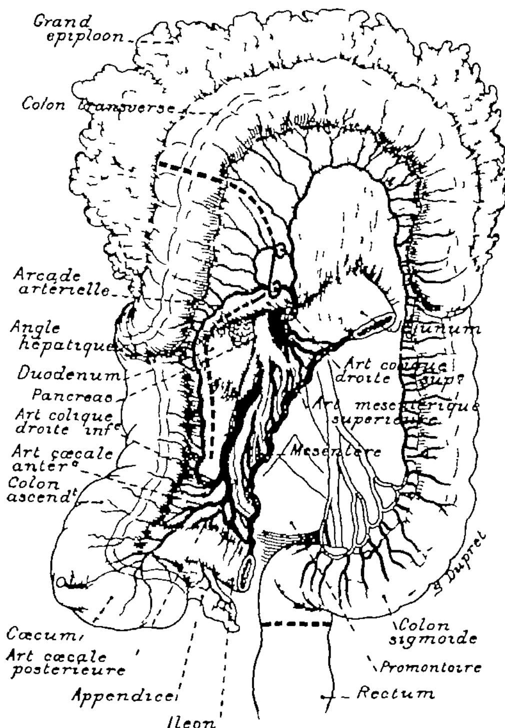


FIG 219 —POLYPOSIS OF THE RECTUM AND OF THE SIGMOID

This anatomical plate is for the purpose of showing where the transverse colon is divided, and how arterial circulation in the preserved part of the colon is assured.

Grand épiploon—Great omentum. *Côlon transverse*—Transverse colon. *Arcade artérielle*—Arterial arch. *Jéjunum*—Jejunum. *Angle hépatique*—Hepatic flexure *Art colique droite supe.*—Superior right colic artery *Duodénum*—Duodenum. *Art mésentérique supérieure*—Superior mesenteric artery *Pancréas*—Pancreas. *Mésentère*—Mesentery *Art colique droite infe.*—Inferior right colic artery *Côlon sigmoïde*—Sigmoid colon. *Art cæcale antére*—Anterior cæcal artery *Promontoire*—Promontory of the sacrum. *Côlon ascendt*—Ascending colon. *Rectum*—Rectum. *Cæcum*—Cæcum. *Art cæcale postérieure*—Posterior cæcal artery *Appendice*—Appendix *Iléon*—Ileum.

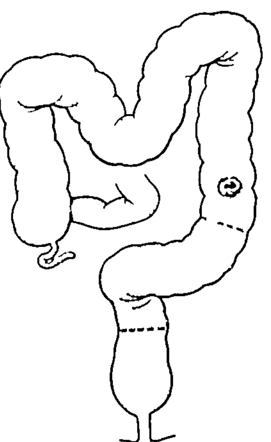


Fig 220 —Polyposis of the Rectum and of the Sigmoid

Already treated by an artificial anus. The surface in grey shows the part which will be resected. Note it is not possible to bring down the descending colon as a result of the artificial anus.

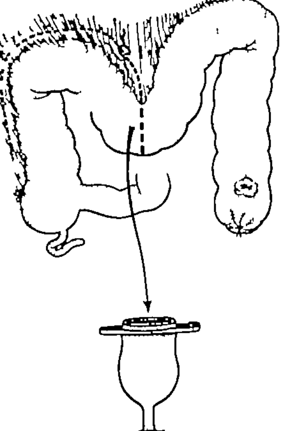


Fig 221 —Polyposis of the Rectum and of the Sigmoid

Already treated by an artificial anus. Resection has been performed The division has been made at Douglas pouch above and close to the anus. The dotted line indicates the middle of the transverse colon, where it will be divided, and the point where the surgeon will separate on the right side the colon from the omentum and from the peritoneum. The colic artery will be divided to allow of descent of the intestine.

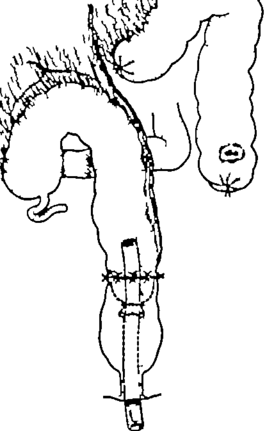


Fig 222 —Polyposis of the Rectum and of the Sigmoid

Already treated by an artificial anus. The two ends of the left colon have been closed by a purse-string suture and will be removed at a second stage. How it is possible to bring the transverse colon into the rectum The tube serves for the passage of flatus. The right inferior colic artery will be sufficient to nourish the part of the colon.

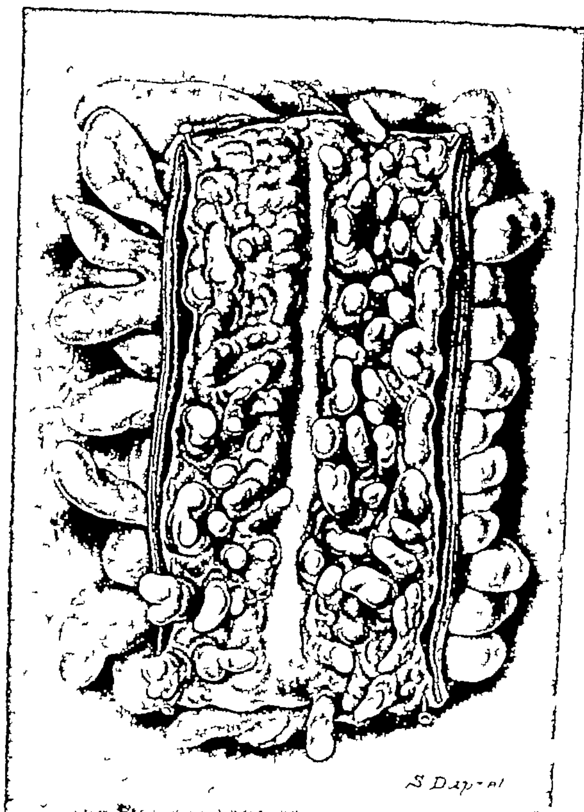


Fig 223 —Polyposis of the Rectum and of the Sigmoid

Anatomical piece

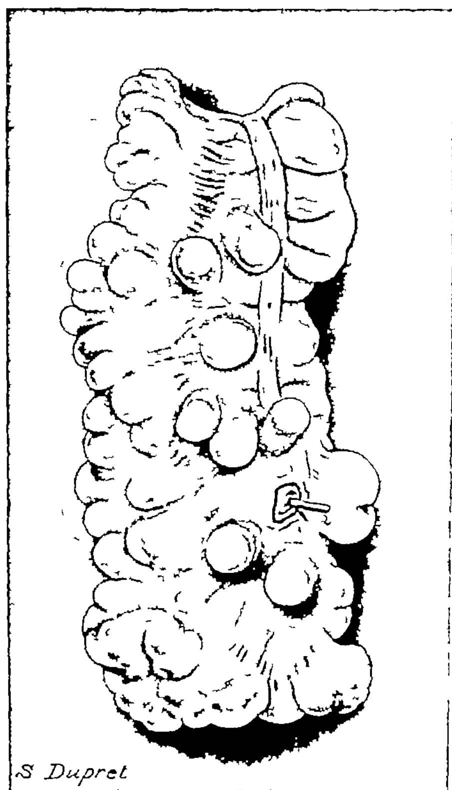


FIG 224 —DIVERTICULA OF THE SIGMOID (PARTIAL COLECTOMY).

External surface The embossed and protuberant parts on the left part of the tumour are fatty omental masses, and not diverticula. The latter are represented by small white masses situated from above downward along the band of the colon one of them has perforated, and has opened into the bladder after having produced a pelvic abscess.

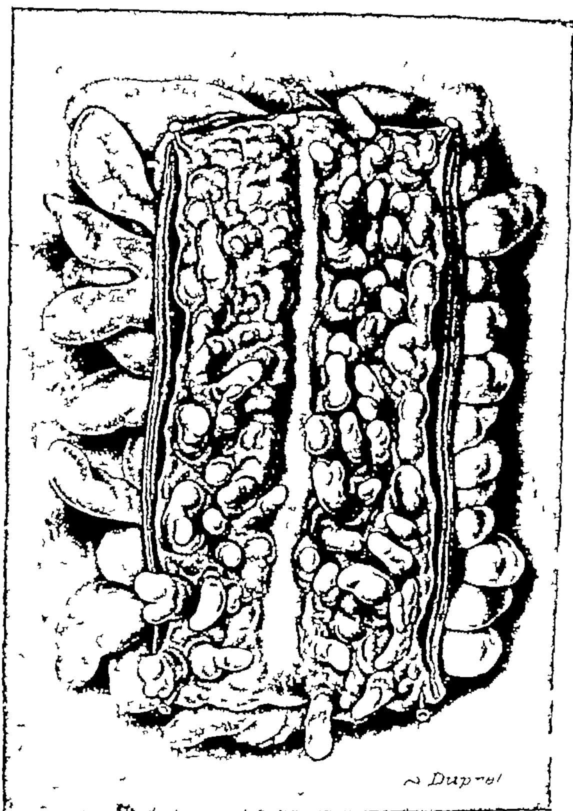


FIG 223 —POLYPOSIS OF THE RECTUM AND OF THE SIGMOID

Anatomical piece

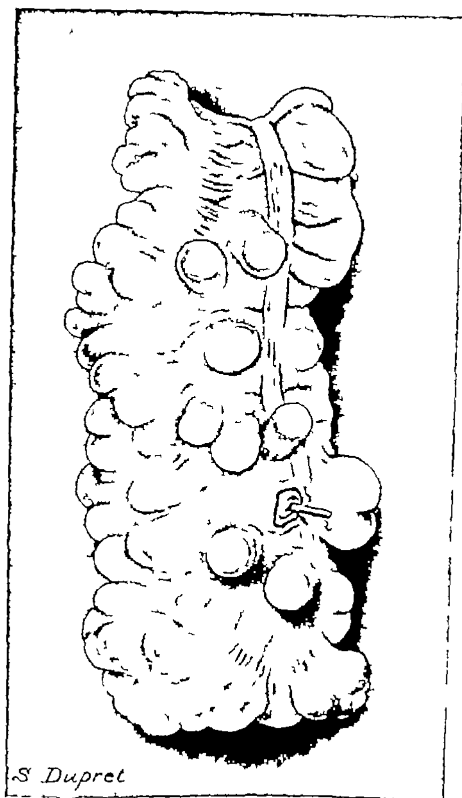


FIG 224 —DIVERTICULA OF THE SIGMOID (PARTIAL COLECTOMY).

External surface The embossed and protuberant parts on the *left* part of the tumour are fatty omental masses, and not diverticula. The latter are represented by small white masses situated from above downward along the band of the colon one of them has perforated, and has opened into the bladder after having produced a pelvic abscess.

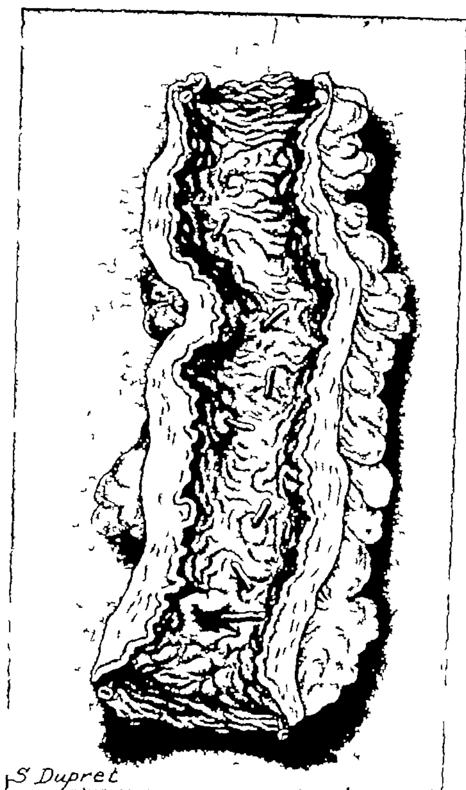


FIG 225 — DIVERTICULA OF THE SIGMOID (PARTIAL COLECTOMY).

Internal surface. The piece has been opened. Note the thickening of the intestinal walls, as also the abundance of fatty tissue surrounding it. Some match ends have been placed in the ends of the diverticula seen in the intestinal cavity. The last corresponds to a diverticulum which has perforated into the bladder. No match end has been placed into the first, situated at the upper part of the piece. It is possible therefore to penetrate into the cavity of eight diverticula in this part of the intestine

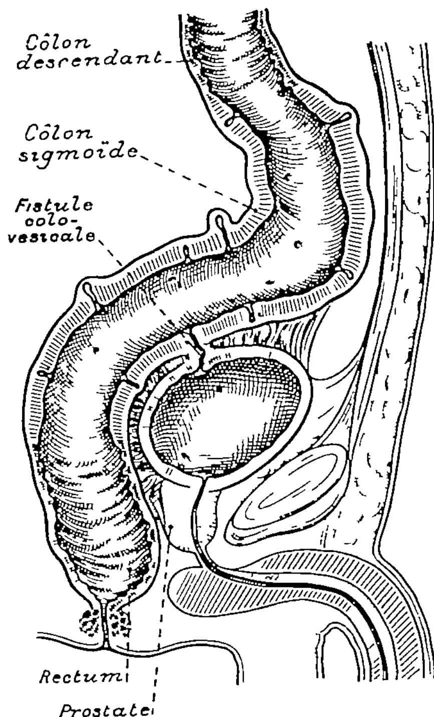


FIG 226.—FISTULA FROM THE COLON TO THE BLADDER AS A RESULT OF DIVERTICULITIS OF THE COLON

Note.—(*a*) The thickness of the sigmoid which forms a true cylindrical inflammatory tumour; (*b*) the presence of diverticula which penetrate into the substance of the wall; some are prolonged into the appendices epiploicæ (*c*) the adhesions which unite the bladder to the inflamed colon (*d*) the existence of the diverticulum which has opened into the bladder: this was recognisable by the cystoscope (*e*) the difference in appearance between the healthy mucosa of the rectum and of the terminal part of the colon and the mucosa above, as also the mucosa of the inflamed intestinal cylinder

Côlon descendant = Descending colon. *Côlon sigmoïde* = Sigmoid colon *Fistule colo-vesicale* = Fistula between the colon and the bladder *Rectum* = Rectum. *Prostate* = Prostate

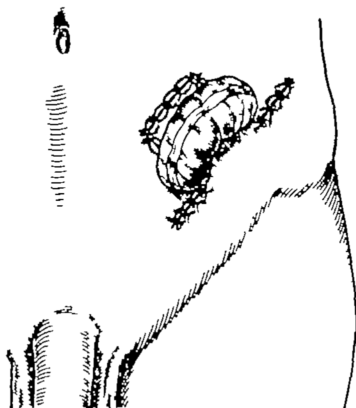


Fig 227 —Fistula between the Colon and the Bladder as a Result of Diverticulitis of the Colon

The first stage of the operation. Exclusion of the diseased segment by an iliac anus in two stages, with a cutaneous bridge.

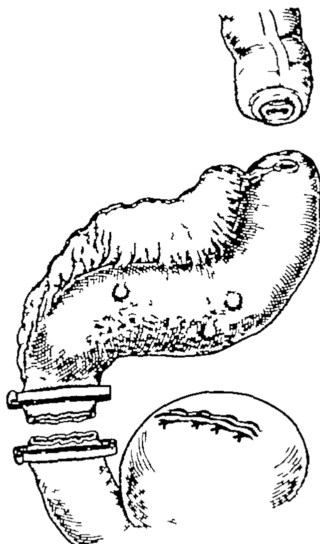


FIG 223 —FISTULA BETWEEN THE COLON AND THE BLADDER AS A RESULT OF DIVERTICULITIS OF THE COLON

The second stage of the operation, carried out two months later The adhesions have in great part disappeared liberation of the diseased colon closure of the bladder division of the sigmoid colon at the junction of its second and third diseased parts. The two ends of the intestine correspond to the two ends of the intestine which has been divided in the first stage.

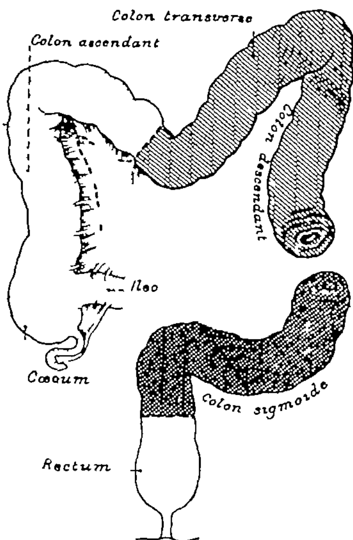


FIG. 229 —FISTULA BETWEEN THE COLON AND THE BLADDER AS A RESULT OF DIVERTICULITIS OF THE COLON

Drawing of the three stages of the operation: (a) iliac anus; (b) resection of the sigmoid (c) liberation of the descending transverse, and ascending colons, with preservation only of a part of the transverse colon, which ought to be brought down to the rectum.

Colon transverse = Transverse colon. *Colon descendant* = Descending colon. *Colon ascendant* = Ascending colon. *Colon sigmoïde* = Sigmoid colon. *Ileon* = Ileum. *Cœcum* = Cæcum. *Rectum* = Rectum.]

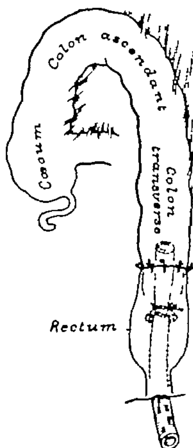


FIG 230 —FISTULA BETWEEN THE COLON AND THE BLADDER AS A RESULT OF DIVERTICULITIS OF THE COLON

Appearance of the organs when the operation is finished. The transverse colon, knotted on to a tube has been brought down and invaginated into the last part of the sigmoid; some sero-serous interrupted stitches have fixed the end to-end anastomosis.

Cæcum = Cæcum. *Colon ascendant* = Ascending colon. *Colon transverse* = Transverse colon. *Rectum* = Rectum.

IX

CICATRICIAL STRICTURE OF THE RECTUM

The majority of strictures are the result of rectitis, acute ordinary or gonorrhœal rectitis, chronic rectitis due to syphilis, to tuberculosis, or to infections of different causation

Stricture is four times more frequent in the female than in the male it is generally seen after thirty

Pathological Anatomy —The stricture is situated low down, generally 5 or 6 centimetres from the anus It is nearly always single Its extent measures on an average 1 to 4 centimetres, its size varies The case which served as a model for the annexed figures allowed of the passage of a Nélaton s sound It presented the classic form of a tunnel, the opening of which answered to the anus and the apex to the stricture If a longitudinal section be made of a piece of the stricture the following alterations are to be seen

(a) At the stricture the coats are thickened, indistinct, and fused into a fibrous mass the mucosa persists

(b) Above the stricture, circular ulceration

(c) Below the stricture lesions of proliferating rectitis with papillomata of the mucosa Around the stricture there exist some lesions secondary to peri rectitis, sometimes even fistulæ

Histologically the normal cylindrical epithelium of the rectum has given way to pavement epithelium and is atrophied The glands of the submucosa disappear If the stricture be old standing, the fibrous transformation cannot be distinguished from the neighbouring layers

Premonitory Symptoms —(a) Signs of chronic rectitis preceding those of stricture acute pain a sensation of burning

(b) Muco-purulent discharge from the anus without fæcal evacuation

(c) Dyspepsia with chronic constipation

Rectal examination reveals loss of suppleness of the mucosa and vegetations

... of stenosis appear troubles ... tenesmus the fecal ... like ribands, and passed like ... place to diarrhœa due to ... passage of liquid matters. The ... permit and may produce ... The discharges are continuous or ... time of defecation. The general ... extended and even general weak ... asthenia, etc.

... may show marginal erythema, some ... a peri-anal fistula, etc. On examina... in a rigid canal diminished in size pro... upwards, for 4 or 5 centimetres. If the ... through the stenosis it will enter into a dilata... and return covered with fœtid pus.

... may discover the limits of the zone of ... rum

... structure ends in the following complica... intestinal obstruction, cancerous change ... engrafted on a weakened soil, tuberculosis, pneu...

...—Dilatation by Hegar's bougies under local anæs... combined or not with electrolysis

...ostomy.—This causes disappearance of the rectitis ... and allowing more frequent dilatation, and ... or an aseptic operation for excision of the rectum ... The best procedure is the one we employ. It ... the stricture like a bunch of hæmorrhoids ... of choice because it preserves the continence ... anæsthesia suffices *

... be complicated by rectitis, by ulceration, by peri... fistulæ ... must be performed the stricture ... months afterwards, and the iliac anus suppressed, ...

... Fascicle Sourds ... Edited by ...

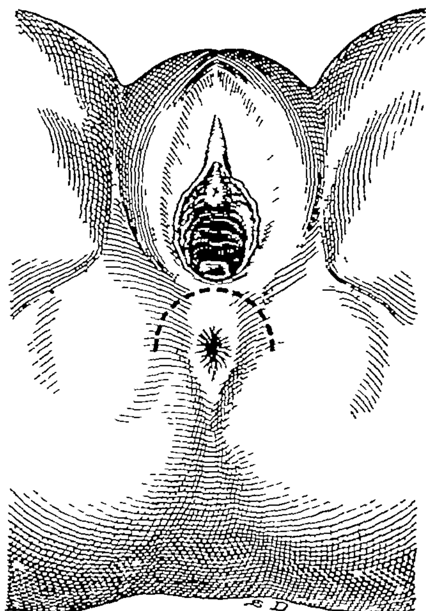


FIG 231 —CICATRICIAL STRICTURE OF THE RECTUM IN THE FEMALE. EXTIRPATION
Cutaneous incision the section is made 1 centimetre behind the fourchette

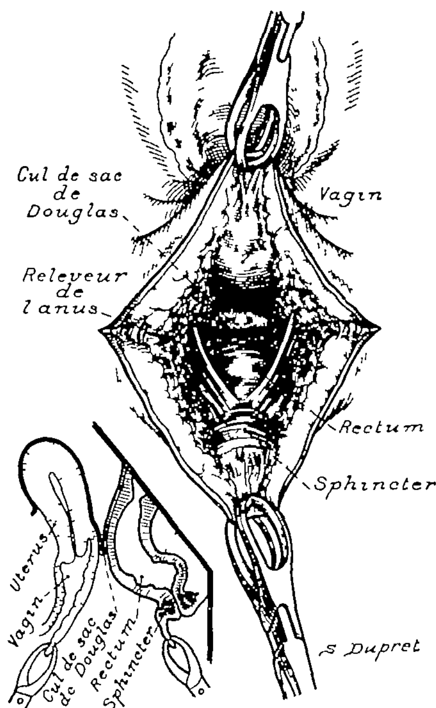


FIG 232.—CICATRICIAL STRICTURE OF THE RECTUM IN THE FEMALE. EXTIRPATION

Separation of the rectum from the vagina (see drawing on the left).

Cul de-sac de Douglas=Douglas pouch. *Vagin*=Vagina. *Releveur de l'anus*=Levator ani. *Rectum*=Rectum *Sphincter*=Sphincter *Utérus*=Uterus.

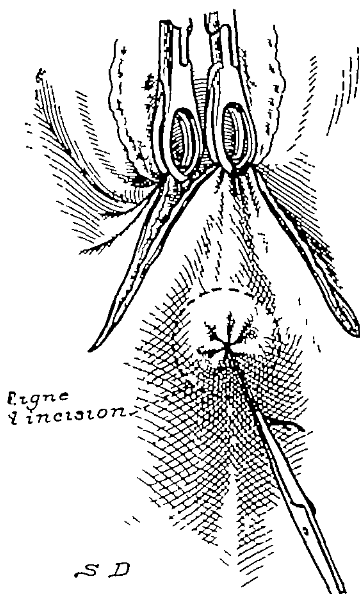


FIG 233.—CICATRICIAL STRICTURE OF THE RECTUM IN THE FEMALE. EXTIRPATION

Separation of the rectum from the vagina is finished. The excision of the rectum is about to begin. The anus is sutured by silkworm gut The dotted line indicates the circular division of the skin.

Ligne d'incision = Line of incision.

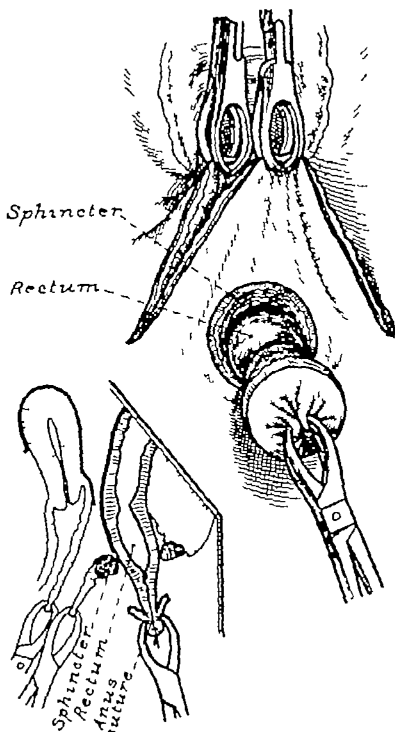


FIG 234 — CICATRICIAL STRICTURE OF THE RECTUM IN THE FEMALE. EXTIRPATION Liberation of the sphincter (see the drawing below and to the left).

Sphincter = Sphincter *Rectum* = Rectum *Anus suturé* = Anus sutured.

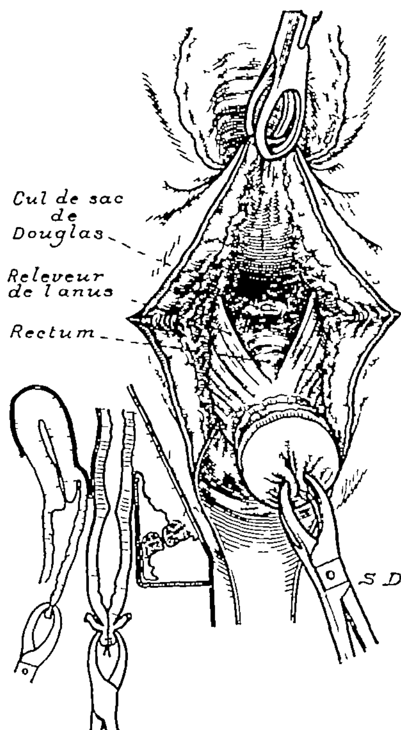


FIG 235.—CICATRICIAL STRICTURE OF THE RECTUM IN THE FEMALE. EXTIRPATION

Note the two levatores ani exposed. They are to be detached close to the rectum to preserve their integrity The retractor hides the anus, stripped of its mucous layer The operator has drawn the ano-rectal cylinder into the perineal wound (see drawing on the left).

Cul-de-sac de Douglas = Douglas pouch. *Releveur de l'anus* = Levator ani. *Rectum* = Rectum.

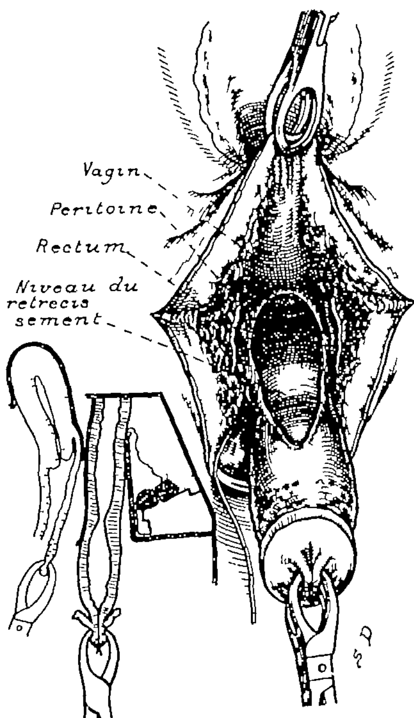


Fig 238.—Cicatricial Stricture of the Rectum in the Female. Extirpation

This part of the operation is made entirely by the recto-vaginal wound. The anus is hidden by the retractor (see the drawing at the lower angle of the figure).

Vagin = Vagina. *Péritoine* = Peritoneum. *Rectum* = Rectum. *Niveau du rétrécissement* = Stricture

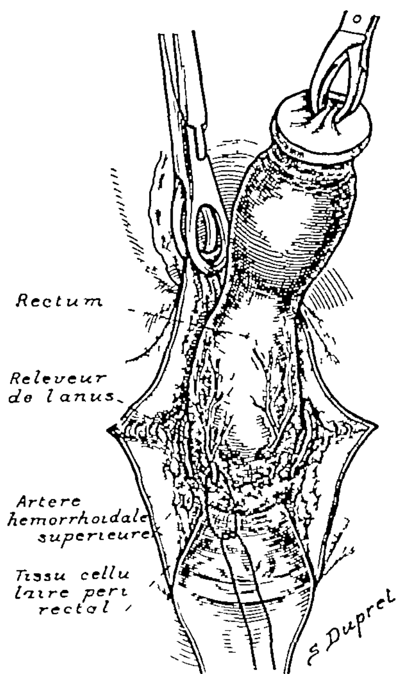


Fig. 237.—Cicatricial Stricture of the Rectum in the Female. Extirpation

Note the position of the stricture. Ligature of the superior hæmorrhoidal vessels. Note the edge of the levatores ani, separated from the rectum.

Rectum = Rectum. *Releveur de l'anus* = Levator ani. *Artère hémorrhoïdale supérieure* = Superior hæmorrhoidal artery. *Tissu cellulaire péri-rectal* = Cellular tissue round the rectum.

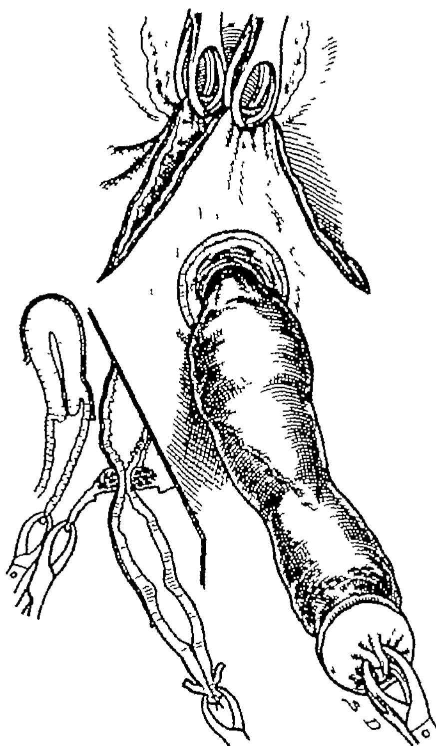


FIG 238.—CICATRICIAL STRICTURE OF THE RECTUM IN THE FEMALE. EXTIRPATION
The liberated rectum has been brought out by the anus. The sphincter is laid bare (see drawing at the left).

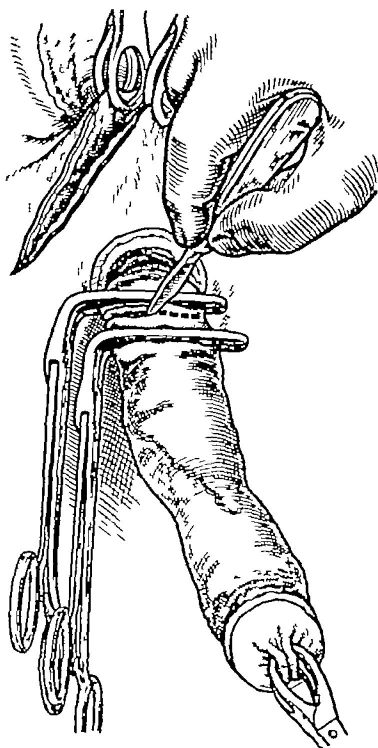


Fig. 230.—Cicatricial Stricture of the Rectum in the Female. Extirpation
Division of the rectum in a healthy part.

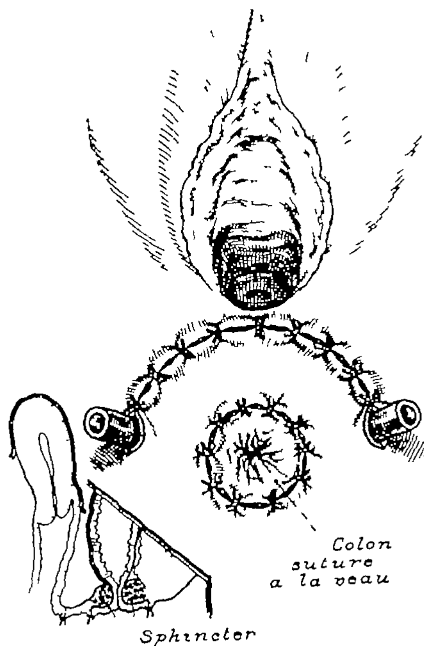


FIG 240.—CICATRICIAL STRICTURE OF THE RECTUM IN THE FEMALE. EXTIRPATION

The operation is finished. The rectum has been sutured to the skin. The case which has served as a model was operated upon at the Hôpital St. Michel and cured in fifteen days, with immediate recovery of the functions of the anus.

Côlon suturé à la peau—Colon sutured to the skin. *Sphincter*—Sphincter

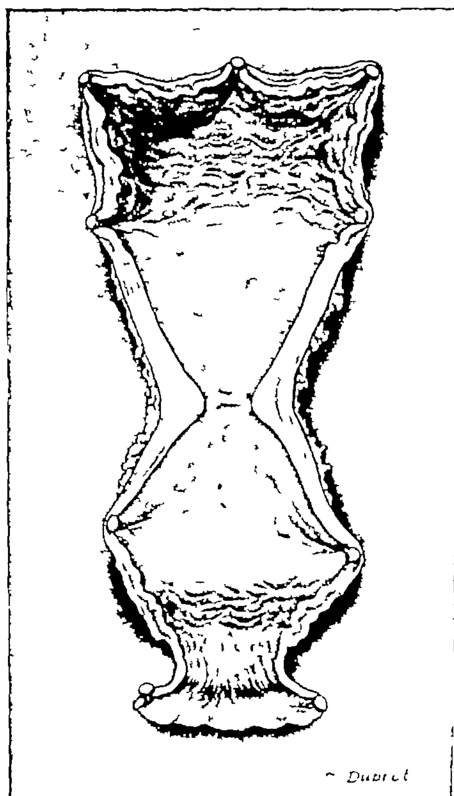


FIG 241 —CICATRICIAL STRICTURE OF THE RECTUM IN THE FEMALE. EXTIRPATION

Piece removed by ano-perineal extirpation. The rectal mucosa in the upper and lower extremities of the piece is normal. Note

(a) Three condylomata in the rectal portion below the stricture
(b) The appearance of the stricture like a diaphragm.
(c) The surface of the cicatricial pearly rectum, corresponding to old rectitis.

X

RECTO-VAGINAL FISTULÆ

THEY can occur spontaneously, or as the result of an obstetrical injury accidental or operative An abscess opening into the rectum and into the vagina may cause a permanent communication. In course of the accouchement, the use of forceps may tear the middle recto-vaginal septum, or its lower extremity (complete rupture of the perinæum) Agglutination of the superficial levels of the perinæum results and a recto vaginal fistula which persists above the cicatrised skin Injuries (blow from a hoof, impalement) and operations (as vaginal hysterectomy or perineorrhaphy) can cause a loss of substance from rupture or secondary sloughing, and then a fistula

Fistulæ are situated more or less high up, and can then be classed as recto-vulvar and recto-vaginal, properly so-called they sometimes follow hysterectomy they may be reduced to a simple hole, which allows of the passage of gas

The majority of fistulæ have a direct channel the mucosa of the rectum and of the vagina are continued without interruption to the edge of the opening Some of them take a complicated direction, when they result from a recto-vaginal abscess which has opened spontaneously

The passage of gas and of fæcal matters by the vagina constitutes the principal sign of recto vaginal fistulæ

Direct examination generally reveals the condition of the fistula Sometimes when the fistulæ are situated high up as after vaginal hysterectomy it is necessary to give an injection of a coloured liquid The discharge of the liquid by the vagina gives information regarding the site and size of the fistula

Rectoscopic examination is indicated

TREATMENT—(A) *Recto-Vulvar Fistulæ*—Divide the perineal bridge of skin and mucosa in order to change the fistula into an ano-vulvar opening

Excise the cicatricial tissues surrounding the fistula

Separate with the knife the anus, the sphincter, and the rectum from the vagina

Suture the rectal wall with catgut

Suture the sphincter with a U stitch

Suture the vagina with interrupted stitches of slowly absorbable catgut

Bring into apposition transversally the two perineal edges with silkworm gut

(*B*) *Recto-Vaginal Fistulæ* —Divide the rectum and the vagina and suture them separately

Incise transversally the perinæum between the vagina and the anus

Divide the rectum and the vagina as high as possible

Close the vagina and the rectum by non perforating stitches in U

Tampon the rectum and the vagina

Bring the right and left sides of the margin transversally into apposition

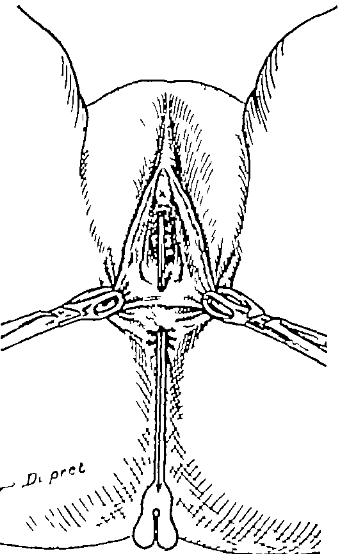


Fig 212.—Recto-Vaginal Fistula

A grooved director shows the direction of the fistulous tract. Two tissue forceps open wide the vulva

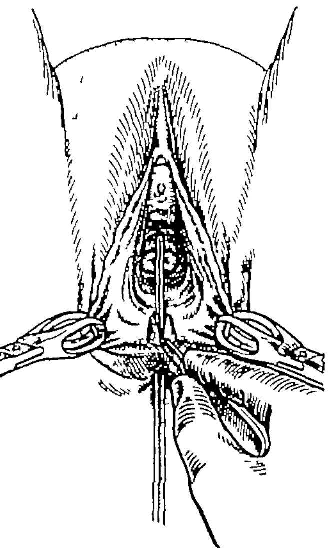


Fig 213.—Recto Vaginal Fistula

Division of the perineal and vaginal bridge. The anal sphincter is cut.

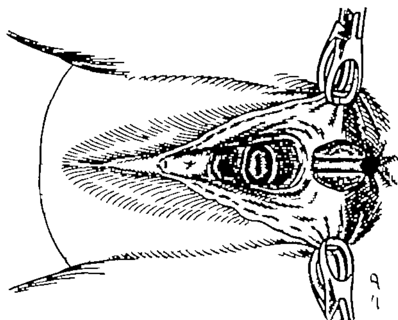


Fig 244.—Recto Vaginal Fistula.
Appearance of the fistulous canal.

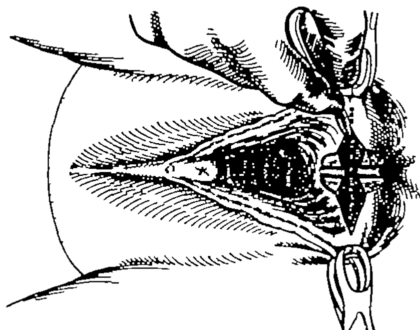


Fig 245.—Recto-Vaginal Fistula.
Transverse incision of the rectum and vagina.

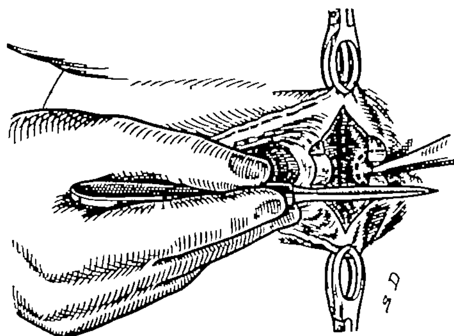


Fig 217.—Recto Vaginal Fistula.
Excision of the lower half of the fistulous tract.

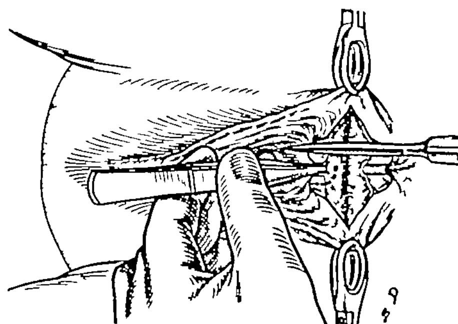


Fig 216.—Recto-Vaginal Fistula.
Excision of the upper half of the fistulous tract.

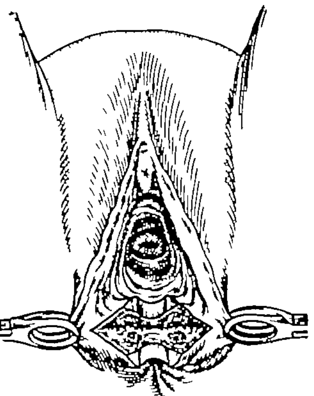


FIG. 248.—RECTO-VAGINAL FISTULA.
Appearance of the perineal wound after excision.

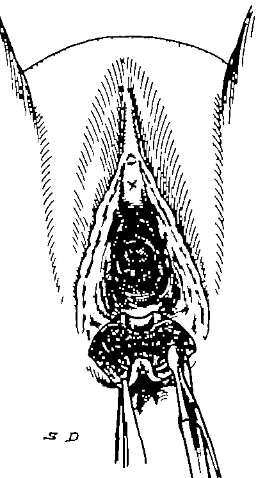


FIG. 249.—RECTO-VAGINAL FISTULA.
Reparation of the mucous part of the anus.

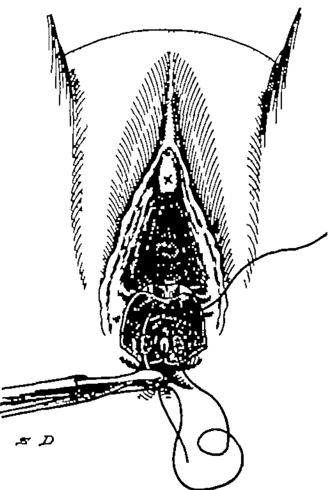


FIG. 250.—RECTO-VAGINAL FISTULA.
Suture of the anal sphincter.

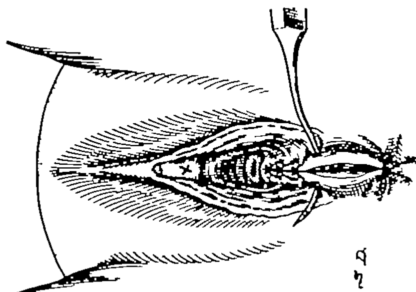


Fig 252 —Recto Vaginal Fistula.

Suture of the cutaneous part of the wound. Note the transverse wound has been changed into a vertical one.

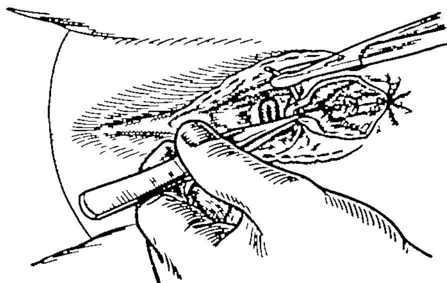


Fig 251 —Recto-Vaginal Fistula

Suture of the vaginal wound

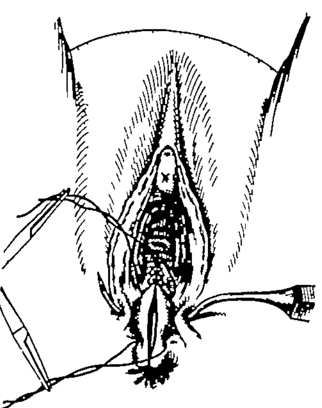


Fig 233.—Recto-Vaginal Fistula

Note the threads are all passed in the cutaneous wound before being tightened, so that the operator can penetrate the deep levels with the needle

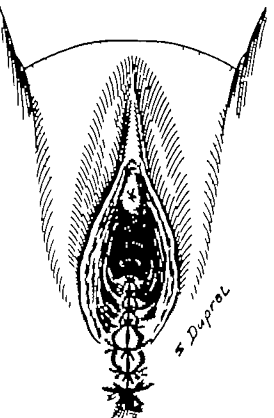


Fig 234.—Recto-Vaginal Fistula.

Appearance of the sutured wound in the perinæum. Collargol ointment.

XI

TREATMENT OF RETROVERSION

INTRA-PERITONEAL SHORTENING OF THE ROUND LIGAMENTS BY LIGAMENTOPEXY, BEHIND THE UTERUS, AND UNDER THE TUBES AND OVARIES, THROUGH THE BROAD LIGAMENTS

BY L. DARTIGUES

ABDOMINAL hysteropexy ought to be expunged from the operative treatment of posterior uterine displacements (retroversion or retroflexion) It is anti anatomical and anti physiological It is inadmissible, seeing the normal anatomical methods of fixation of the uterus which also can be used for operative purposes to immobilise completely an organ which ought to preserve, moreover a certain amount of liberty especially if it become gravid (and we cannot number the cases of dystocia caused by abdominal hysteropexy or ventro-fixation), by fixing it to the posterior abdominal wall (and some cases of intestinal obstruction have been noted from the utero vesical ligaments), and by raising it above the bladder, seeing that the latter alternately fills and empties Many times very marked bladder symptoms have been noticed from the uneasiness occasioned when the bladder becomes full I have operated on some cases where division of the uterine ligaments or freeing the uterus has immediately caused a cessation of marked urinary symptoms

Abdominal hysteropexy ought to be abandoned, whatever the methods, and in order not to confuse—as even well informed surgeons do under the name of abdominal hysteropexy, or of ventro-fixation—all operative replacements of the uterus I invented, in 1905, the word Ligamentopexy, which only refers to uterine replacement by shortening and fixation of one of the ligamentary attachments, leaving free the body of the uterus in the centre of the pelvis

I practised in 1905 then described with illustrations a new method of ligamentopexy—retro-uterine ligamentopexy under the tubo-ovarian ligament through the broad ligaments—which has the advantage of being very simple, very quick, and very efficacious,

because it replaces not only the uterus but raises it, the round ligament passing through the corresponding broad ligament in an avascular area, and going, with its fellow of the opposite side, to form a sort of solid back board to the body of the uterus, at the same time as the Fallopian tube, the utero-ovarian ligament and the ovary rest on the round ligament thus displaced It can be said the body of the uterus seems supported as a person s trunk, and the tubes appear to rest as the arm on the back of the arm-chair formed by the round ligaments

This procedure, since my article appeared (*Presse Médicale*, April 7 1906), has been performed by nearly all French and foreign surgeons, very numerous observations have shown its efficiency, and the permanency of the static results during pregnancy, when it has never led to complications from dystocia

For a number of years I have performed it, whilst practising laparotomy by the transverse suprapubic incision (*Paris-Chirurgical*, May, 1910)

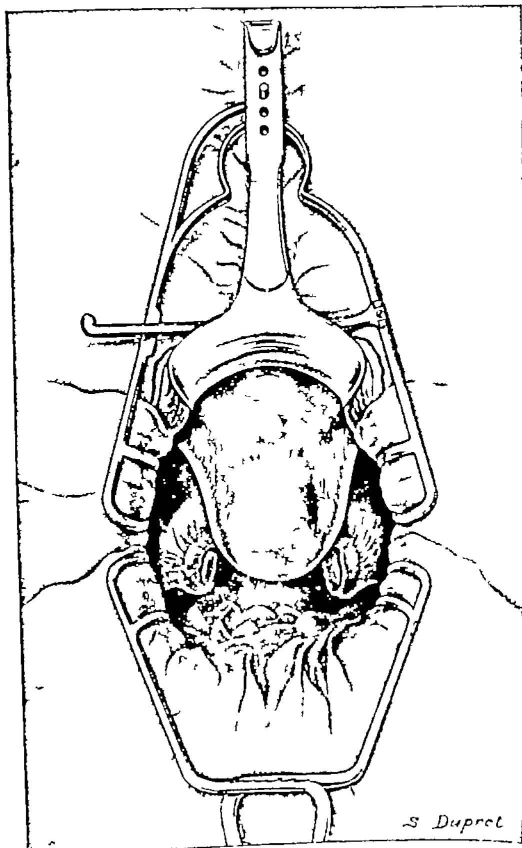


Fig 2[illegible]

Transverse laparotomy has been performed by the technique described by [illegible] (Vol. I.). My laparostat retractor as well as my simple laparostat, which [illegible] the separation whilst forming an everted border to the operative field and [illegible] ing the edges of the abdominal incision In the centre the uterus is [illegible] flexed, with the broad ligaments elongated, or rather in the state of [illegible] The fundus of the uterus, forming a bowl, is lodged in Douglas pouch. [illegible] uterus, by its faulty position, partly hides the dragged upon and prolapsed [illegible] and compresses them.

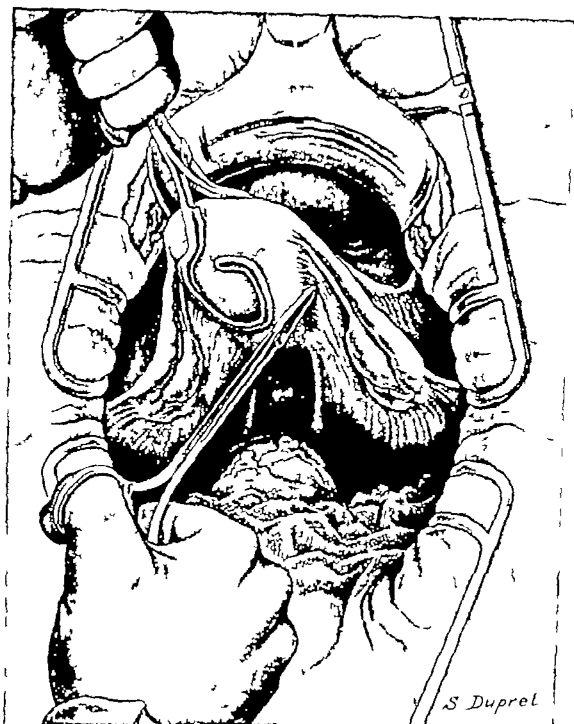


Fig 256.

The uterus has been dislodged from Douglas pouch, seized by my hysterolabe, and brought forward and to the left to stretch the right broad ligament. With one of my pointed hæmostatic forceps the right broad ligament is pierced in the transparent and avascular area.

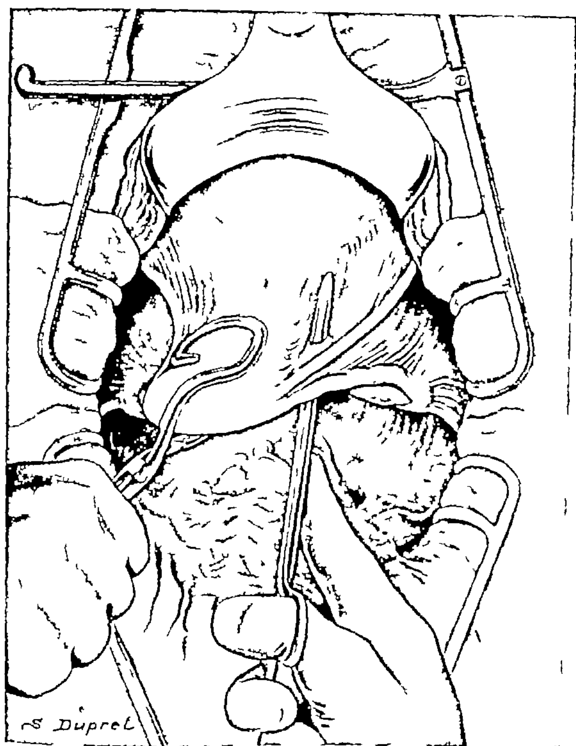


FIG 25"

The broad ligament has been pierced and the uterus pulled back the whole extent of the round ligament to be caught hold of is seen.

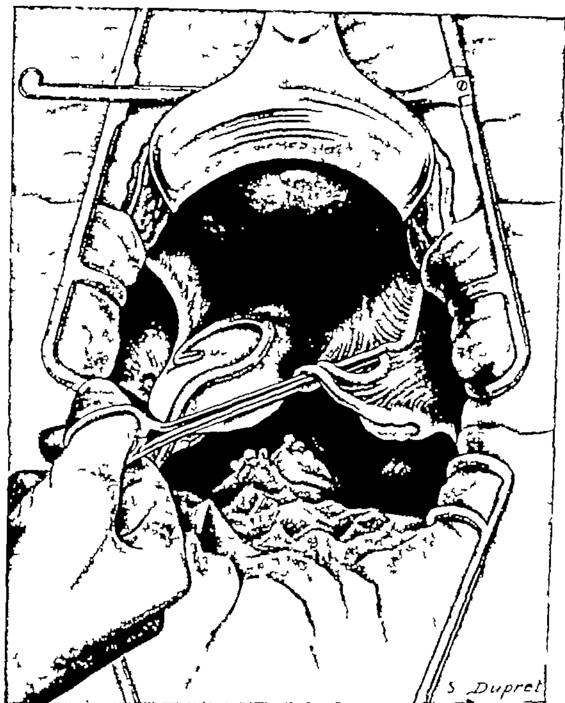


FIG. 258.

The end of the forceps for catching hold of the ligament is directed externally and seizes the round ligament at about the union of its posterior third and its anterior two-thirds. The forceps at this stage is seen seizing the first part of the round ligament and the corresponding tube. It is the most difficult stage of the operation.

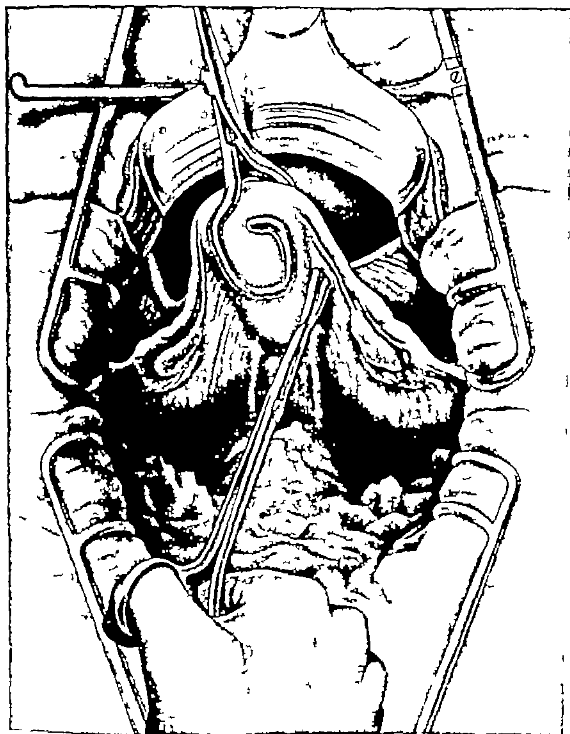


FIG 209

The loop of the round ligament has passed through the broad ligament and is drawn behind.

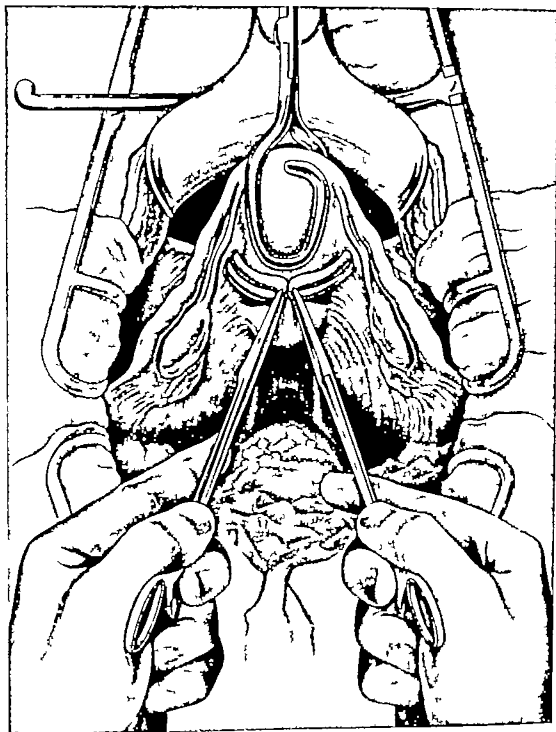


Fig 260

The identical manœuvre has been carried out on the left side; the two ligamentous loops are brought together

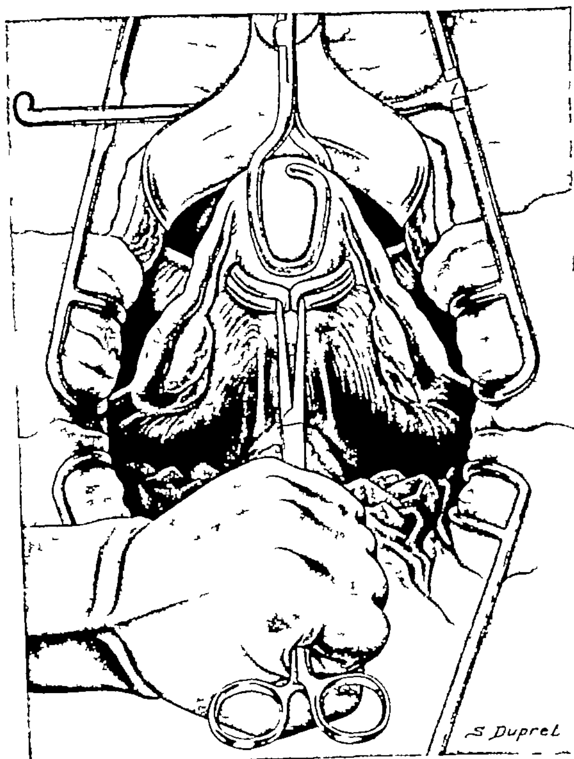


Fig 261

Held by bullet forceps, the two round ligamentous loops are very easily kept in place and the surgeon has his hands free to make the sutures without assistance

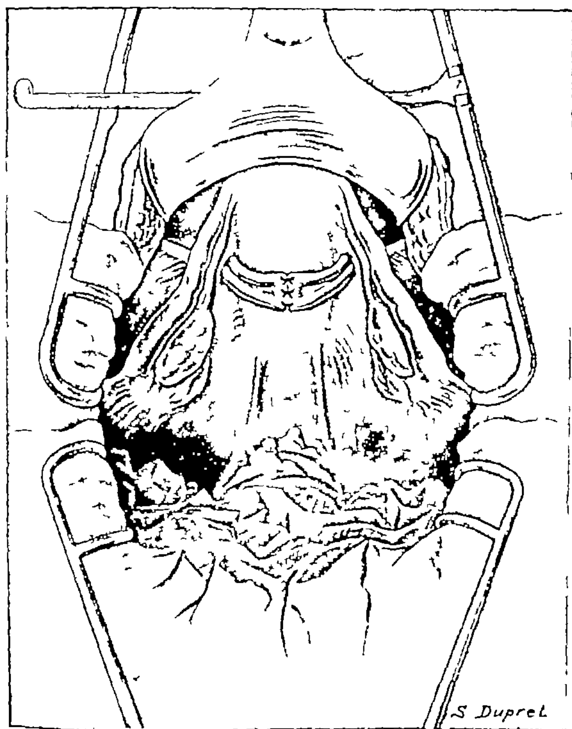


FIG *03.

Result of the operation the uterus is firmly fixed and bound posteriorly the reduction of the uterus is seen to be considerable when the adnexa are dislodged from Douglas pouch.

XII

PERINEAL HYSTERECTOMY FOR CANCER OF THE CERVIX UTERI

THE operation of choice is an extensive abdominal hysterectomy (Wertheim) For fifteen years however we have often performed vagino-perineal hysterectomy by Schauta s method, either for local reasons, as invasion of the vaginal fornices or for general reasons, in delicate women (hæmorrhage diarrhœa, obesity, hemiplegia old age) whose resistance appeared insufficient, or when prolonged continuation in the inclined position might exhaust the myocardium

The lower route is then indicated in fat patients who support badly the dependent position In cases of laparotomy the panniculus adiposus inconveniences the surgeon the operative field is not so large, and deeper Women with a fatty myocardium easily suffer from complications when they remain a long time in the dependent position The vaginal route is then indicated Surgeons who have practised the two routes have noticed the extreme mildness of the after effects of the perineal route

Up to 1920 we practised Schauta s operation (extensive vaginal hysterectomy) Since we have known the perineal method of Cunéo from reading the *Journal de Chirurgie* March 1921, vol xvii No 3 we have employed it four times it is less mutilating than the former and in the average case gives sufficient space it is a very good operation

PRECAUTIONS —In the cases where there are adhesions to the bladder the operator may fear affection of the bladder or ureters In these cases it is a good thing on the one hand to dilate the urethra until the index finger (Bernard Cuneo) can be introduced and, on the other to catheterise the ureter We have found these precautions useful after the application of radium which we employ six weeks before operating This application disinfects the cervix, develops the cicatricial tissue and diminishes the chances of recurrence but creates adhesions unites the tissues and makes the operation more difficult it is here that dilatation of the urethra

and catheterisation of the ureters are of service, during the operation the operator can from time to time recognise the ureters, owing to the presence of the catheter

ANÆSTHESIA.—The most perfect the least conducive to shock, and with the least toxic effects is trans sacral or epidural anæsthesia The injection of 5 c cm. of novocaine (1 100) into eight sacral foramina gives perfect anæsthesia, but ligature and traction of the lumbo-uterine ligaments are slightly painful

In the majority of cases surgeons prefer spinal anæsthesia, an easy and efficacious method, which gives, especially in this region, and for an hour perfect anæsthesia with very little danger

POSITION.—Dorso sacral, raise the site of the operation as much as possible support the shoulders by straps slightly dependent position so that the viscera fall into the abdomen

TECHNIQUE—1 *Cutaneous Incision*.—Transverse curvilinear or arched from one ischial tuberosity to the other an equal distance between the anus and the fourchette

2 *Exposure and Division of the Muscle between the Rectum and the Vagina*.—Pull the fourchette upwards with tissue forceps, divide between the anal and vaginal sphincters, and not as in a perineorrhaphy, over the openings of the vulvar ring otherwise there is a risk of cutting the bulb of the vagina and of making it bleed In order to liberate and divide the rectovaginal muscle, introduce the index and the middle finger of the left hand or closed scissors each side of the median line plunged into the ischio-rectal fossæ The muscle between the rectum and the vagina appears held by traction on the fourchette Divide it by the knife, the recto-vaginal space is reached

3 *Separation of the Rectum from the Vagina*.—By a tampon mounted on forceps dissect the recto-vaginal space as far as possible on the sides, then up to Douglas pouch which is not to be opened Press down a compress between the rectum and the vagina

4 *The Two Vaginal Incisions*.—One incision should be circular and the other vertical and posterior Before making the vertical opening (*a*) mark out the line of the circular incision Look for the point where the transverse division of the vagina should be made, for which purpose note where the lesions of the cervix descend Make the incision at least 4 centimetres below the diseased part of the neck or of the vagina Four centimetres at least of supple vagina are required to separate a vaginal flap

Seize the middle of the vagina with tissue forceps and make a fold on the posterior wall, then another below with a second tissue forceps vertically and in the middle line, this double mark makes a prominent fold, cut it transversely, it is the posterior cut of the circular vaginal incision Do the same on the anterior wall. (b) *Vertical incision* cut open the vagina in the middle of its posterior wall Seize the free margin of the vagina below with two tissue-forceps and with one cut of the scissors divide the posterior vaginal wall in the middle line Stop the incision at the mark indicated by the transverse cut of the knife

The circular division of the vagina is then to be completed Continue it laterally, with the scissors or with the knife, and reach in front the anterior landmark We have then made two incisions (a) circular incision which separates the upper suspected part of the vagina from the lower healthy part, and (b) vertical incision which enlarges the vulva

5 *Closure of the Upper Vagina* — Free an upper vaginal flap and separate it from the neighbouring tissues, incompletely but sufficiently, in order to be able to close it Introduce a drain in contact with the neck and then dissect the vaginal flap in front and at the sides when the vagina has been freed to about 3 or 4 centimetres in depth, fill the cavity with a tampon soaked in iodine, and then suture the vagina with interrupted stitches

6 *Lateral Dissection of the Vagina* —Up to the present the posterior wall of the vagina only has been completely liberated the remainder of the vagina has only been separated to form the vaginal flap and to close the latter Now separate the vagina laterally with a tampon on forceps, and continue as far as necessary to expose and free the ligaments of the vagina, which right and left, are formed of cellular tissue in which run the branches of the vaginal artery which must be cut

7 *Dissection of the Bladder and Ureter* —We have already said in the cases where there are adhesions of the anterior fornix of the vagina with the bladder from the invasion of the neoplasm, or as a result of an application of radium catheters should be placed in the ureters and the urethra dilated so that a finger can be introduced into its cavity (Bernard Cunéo) Owing to these landmarks the bladder can be separated completely from the vagina by the knife or by scissors as far as the space between the uterus and the bladder, open the cul-de-sac

8 *Ligature of the Vaginal Ligaments* - These ligaments contain

the branches of the vaginal artery, divide them on the right and left side, the division allows the vagina partially to be lowered

Bernard Cunéo* in his article has excellently described this stage of the operation, based on the works and researches of Descomps We cannot too highly recommend the article to surgeons who have to perform this operation often If the anatomical knowledge of the operator be insufficient, he should have recourse to the following procedure by means of a tampon on forceps, free carefully the lateral parts of the vagina, and in this way expose the ligaments formed by the vaginal vessels *An assistant should draw* the closed vagina to the opposite side where the surgeon is working—*i.e.*, to the right of the patient—as the pedicle of the left side is first freed another assistant should hold in position a vaginal retractor, so as to show clearly the left base of the vaginal bed, the left vaginal ligament is thus exposed the operator, perhaps, will see it, but he will certainly feel it Apply J L Faure's uterine forceps to this pedicle about 1 centimetre from the vagina and then cut it The assistant should still draw on the vagina, always towards the right Keep hold of the uterine forceps Generally this incision is sufficient, if there still remain a little of the ligament above and if the uterus be still distant, place a second forceps on the ligament higher up and divide the tissues again It is therefore often necessary to cut the vaginal ligament twice The *division being made before passing to the opposite side*, ligature the ligament with strong catgut cut it short, and then remove the forceps Afterwards pass to the other side and divide and tie the right ligament in the same way as the left The utero-vaginal segment is thus lowered

9 *Exploration for and Ligature of the Uterine Arteries*—By means of the retractors and of a tampon mounted on forceps, and starting at first on the left side the operator must recognise the pulsation of the uterine artery he must see it pick it up with a short curved Deschamps needle and ligature it The artery must be seen to be tied The artery being tied divide the uterine vessels then pass to the right side and in the same way ligature and divide the uterine artery

10 *Division of the Utero-Sacral Ligaments*—The ligaments remain posteriorly two ligaments are felt holding the uterus divide them without a ligature for they contain no vessels

* Technique de l'Hystérectomie Périnéale pour Cancer du col de l'Uterus" by MM Bernard Cunéo and Gaston Picot (*Journal de Chirurgie, loc cit*)

11 *Division of the Left Round Ligament*—Cut open the body of the uterus (not the neck or the isthmus) near the fundus in order to seize it with tissue forceps Expose the round ligament ligature and divide it The uterus is still held by the lumbo-uterine pedicle, place a small Richelot s clamp close to the uterus, divide the broad ligament close to the uterus, consequently the left adnexa remain in position with the forceps The uterus falls over tie and cut on the opposite side the lumbo-uterine and round ligament The two pedicles are to be kept like the others The ligature ought to be firm, well made, with fine and strong catgut, because the ligaments will have to be drawn upon at the end of the operation The uterus being removed pass to the left adnexa held by the clamp

12. *Ligature of the Adnexa*—Tie them on both sides and separate them by a cut of the scissors the ligature is to be preserved

13 *Closure of the Peritoneum*—Close the peritoneal cul-de-sac by a continuous suture by means of a needle on a handle At the two ends of this suture the threads corresponding to the ligature of the utero-sacral ligaments are visible bring them outside the peritoneal cavity and knot them together in such a way that the peritoneal suture is above them The two stumps of the broad ligaments are thus brought together in the median line tied together below the peritoneal suture and on the side of the vagina

14. *Closure of the Posterior Vaginal Wall*—Bring together the two posterior vaginal flaps by four or five interrupted stitches of catgut

15 *Closure of the Perineal Wound*—The incision from one ischial tuberosity to the other is to be partially sutured leave an opening of 1 or 2 centimetres at the ends of the incision and introduce a drainage-tube separating the rectum from the vagina

16 *Tamponning the Vagina*—Introduce a drain soaked in collargol ointment into the bottom of the wound and let it remain in position three or four days

17 *Introduction of a Pezzer s Catheter into the Bladder*—During the operation the bladder may be injured suture it immediately If the ureter be divided it is generally noticed during the following days if the case be one of uterine cancer it is better to perform nephrectomy provided the other kidney be sufficient

IMMEDIATE RESULTS—They are generally very simple Cicatrisation occurs in about three weeks Shock is nil Gravity of the operation slight Personally we have performed Schauta s

operation twenty three times with two deaths, and Cunéo's four times without a death, it is, therefore, a mild operation We may remark all these cases apply to patients already weak and obese, and on whom, from feeble resistance, we did not wish to operate by the abdominal route

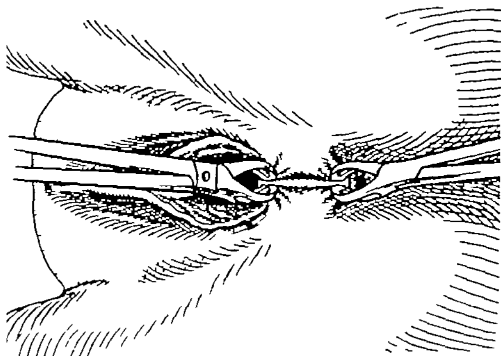


Fig 263.—Vaginal Hysterectomy for Cancer of the Cervix. (Bernard Cunéo's Method.)

The skin of the perineum is stretched by two tissue forceps to facilitate the incision.

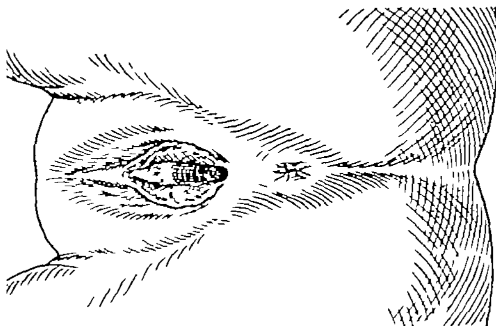


Fig 261.—Vaginal Hysterectomy for Cancer of the Cervix. (Bernard Cunéo's Method)

Appearance of the vulva in a nulliparous and fat patient in whom extirpation by the vaginal route is to be recommended.

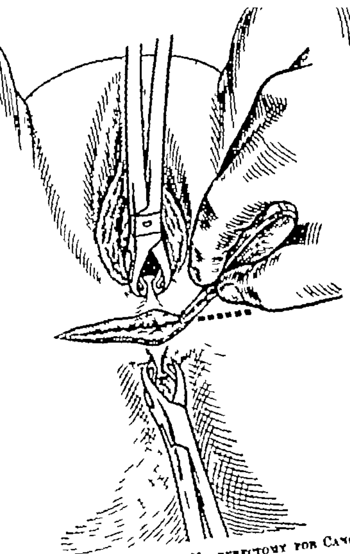


FIG. 206.—VAGINAL HYSTERECTOMY FOR CANCER OF THE CERVIX.

Transverse incision of the skin.

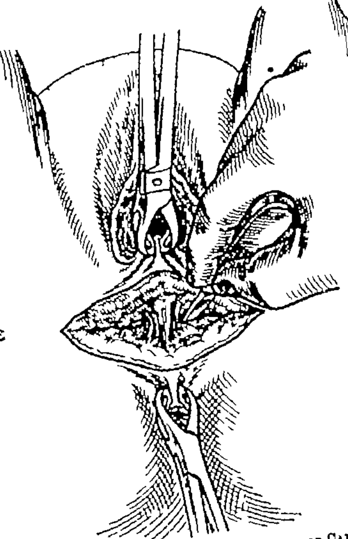


FIG. 207.—VAGINAL HYSTERECTOMY FOR CANCER OF THE CERVIX

The recto-vaginal muscle, keystone of the arch over the place of separation of the septum.

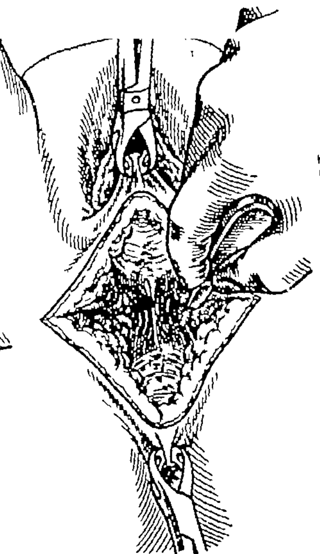


FIG. 208.—VAGINAL HYSTERECTOMY FOR CANCER OF THE CERVIX

Separation of the rectum from the vagina. It should be extended as high as possible.

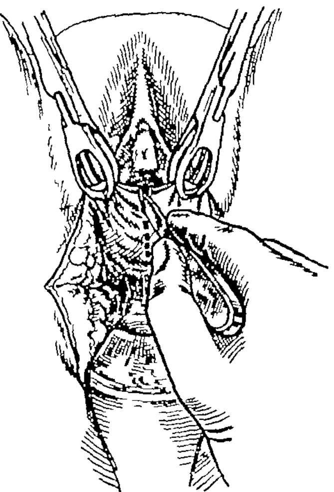


FIG 269.—VAGINAL HYSTERECTOMY FOR CANCER OF THE CERVIX.

Median incision of the posterior wall. The two tissue forceps have been placed symmetrically so that the incision may be made vertically

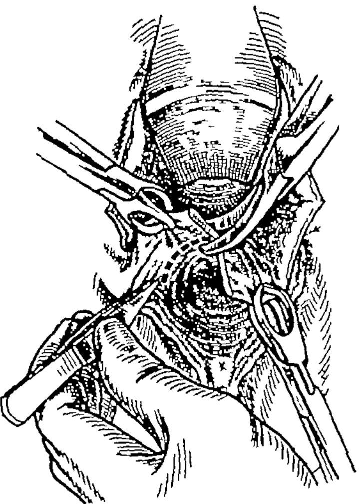


FIG 270.—VAGINAL HYSTERECTOMY FOR CANCER OF THE CERVIX.

Circular incision of the vagina carried out close to the separated part of the vaginal wall

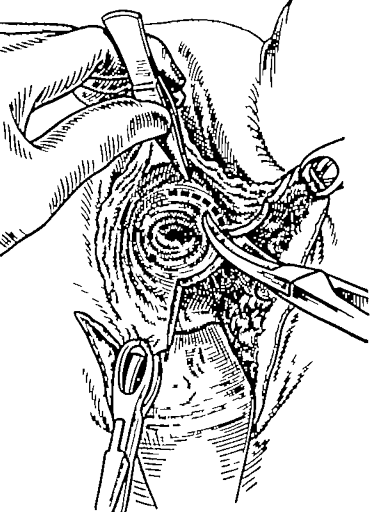


Fig 271 —Vaginal Hysterectomy for Cancer of the Cervix

The incision continued circularly

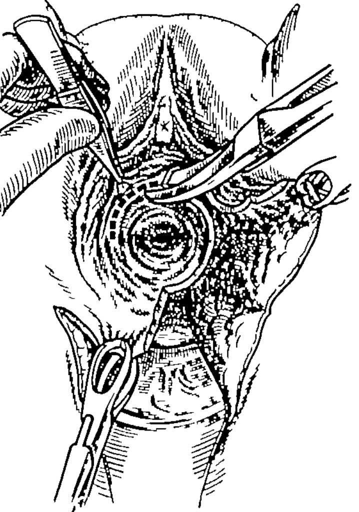


Fig 272.—Vaginal Hysterectomy for Cancer of the Cervix

Circular incision of the vagina so as to separate the upper half of this canal from the cervix Note here the cervix has com pletely disappeared under the influence of radium; there remains a central opening at the base of a tunnel formed of cicatricial mucous membrane.

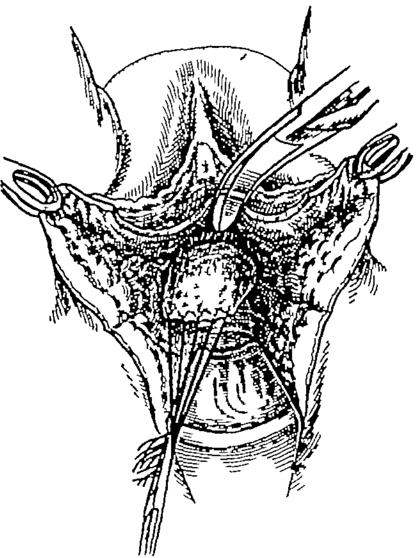


Fig 278.—Vaginal Hysterectomy for Cancer of the Cervix
Dissection of the anterior wall of the vagina.

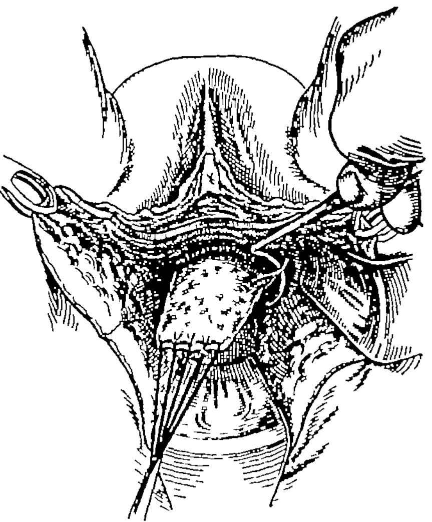


Fig 279.—Vaginal Hysterectomy for Cancer of the Cervix
Ligature of a vaginal artery

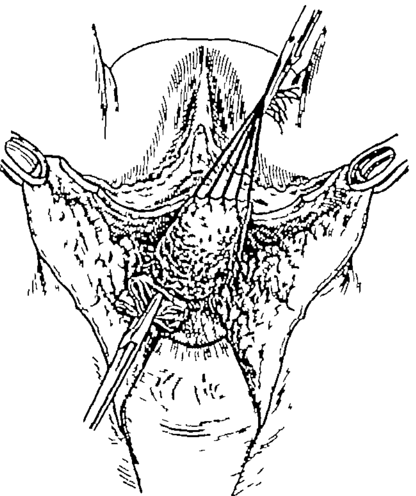


Fig 230.—Vaginal Hysterectomy for Cancer of the Cervix.

The separation of the vagina continued by a compress on *forceps* by the posterior route.

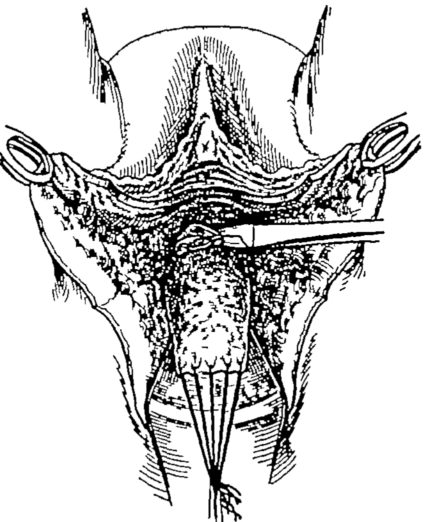


Fig 231.—Vaginal Hysterectomy for Cancer of the Cervix

Separation of the anterior wall of the vagina with a compress on forceps.

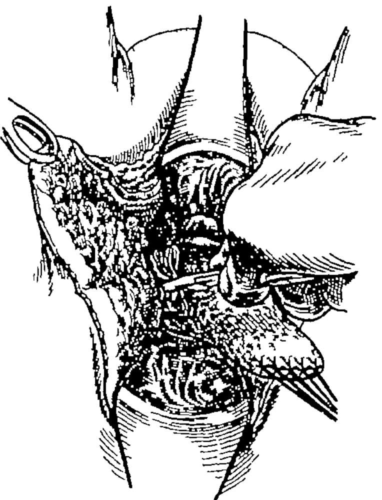


FIG 287.—VAGINAL HYSTERECTOMY FOR CANCER OF THE CERVIX

Separation of the uterus with the vagina continued.

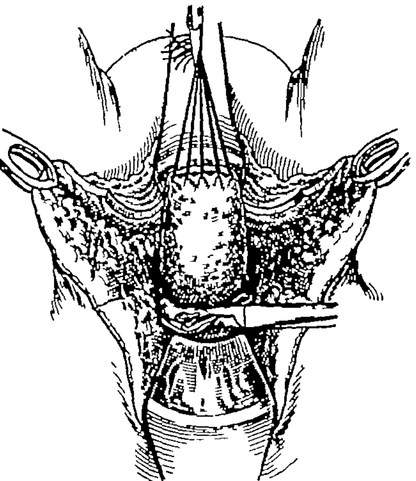


FIG 288.—VAGINAL HYSTERECTOMY FOR CANCER OF THE CERVIX

Separation of the uterus with the vagina in its most difficult part. Here moreover radium has produced a marked fibrous reaction. The operator can no longer feel the cervix through the vaginal wall, because the former has been destroyed; this stage demands great care so as not to open the rectum, and, above all, the bladder

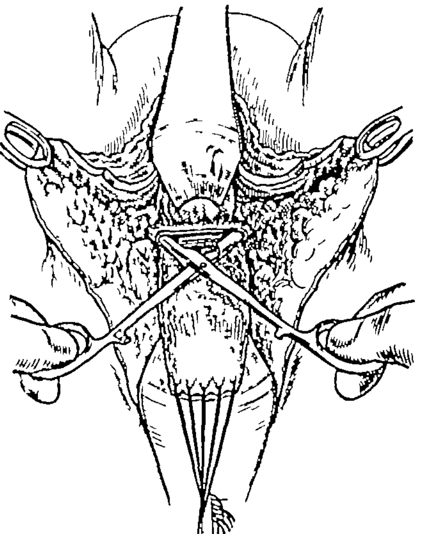


Fig. [illegible] —Vaginal Hysterectomy for Cancer of the Cervix.
Opening the anterior fornix of the vagina. Enlargement by forceps.

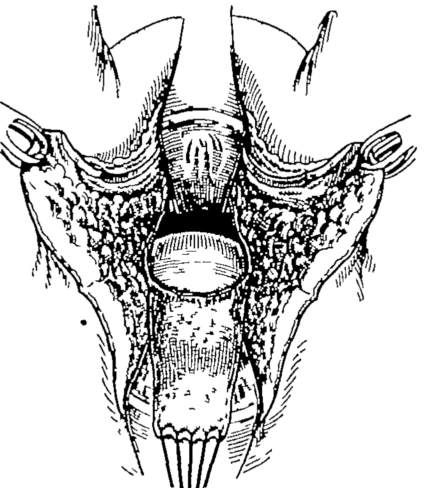


Fig. 280 —Vaginal Hysterectomy for Cancer of the Cervix.
Bringing down the uterus; the fundus is visible.

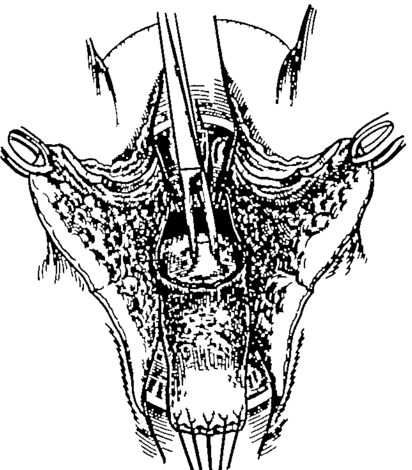


FIG. 290.—VAGINAL HYSTERECTOMY FOR CANCER OF THE CERVIX.

The fundus is seized by Museux's forceps.

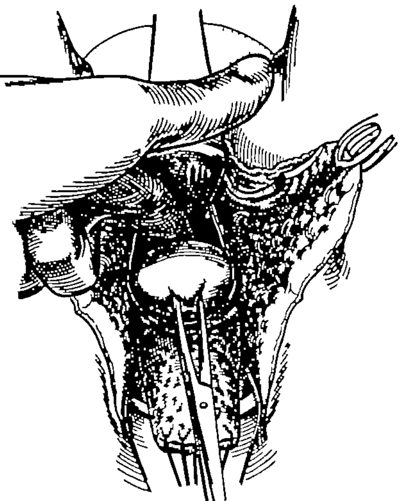


FIG. 291.—VAGINAL HYSTERECTOMY FOR CANCER OF THE CERVIX.

The index finger of the left hand lowers the uterus and tips it up in front.

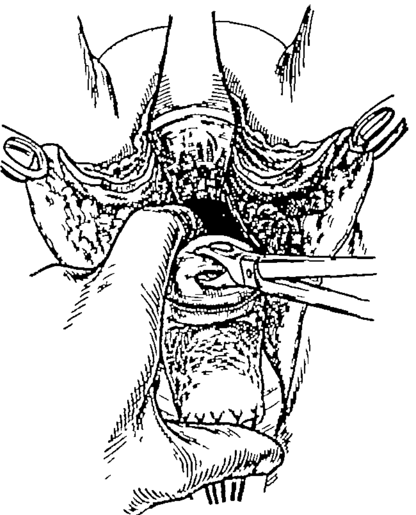


FIG 292.—VAGINAL HYSTERECTOMY FOR CANCER OF THE CERVIX.

The left index finger applied forcibly to the posterior wall of the uterus so as to stretch the broad ligament.

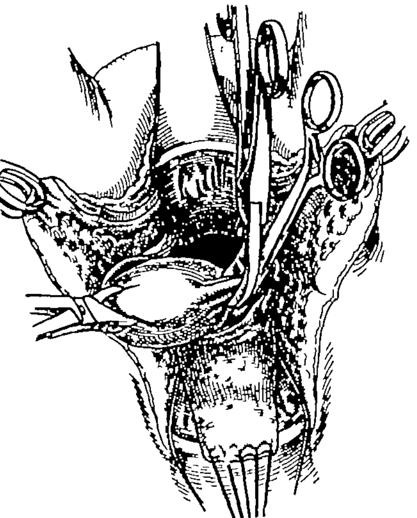


FIG 203.—VAGINAL HYSTERECTOMY FOR CANCER OF THE CERVIX.

The superior border of the broad ligament is seized by strong forceps. *Division of* the ligament between the forceps and the uterus. Here the adnexa are atrophied and adherent each time it is possible and easy they should be brought over with the uterus.

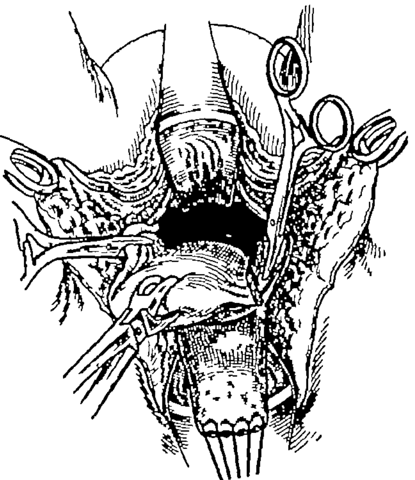


Fig. 201.—Vaginal Hysterectomy for Cancer of the Cervix.

Seizing the right broad ligament.

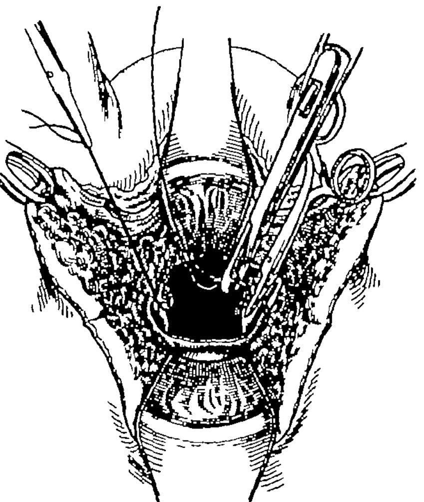


Fig. 203.—Vaginal Hysterectomy for Cancer of the Cervix.

Ligature of the broad ligaments. Catgut threaded in a needle pierces the ligament.

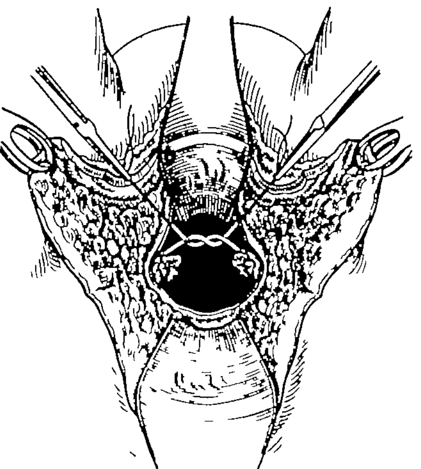


FIG 206.—VAGINAL HYSTERECTOMY FOR CANCER OF THE CERVIX

The two ligamentous stumps are tied together

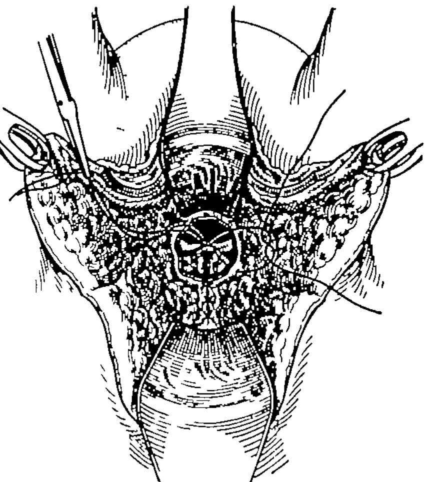


FIG 207.—VAGINAL HYSTERECTOMY FOR CANCER OF THE CERVIX

The united stumps are fixed to the peritoneal opening which has already been contracted.

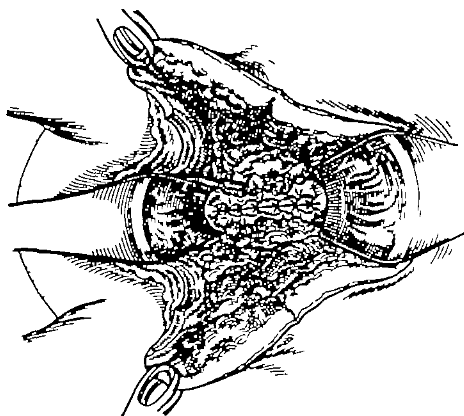


Fig 298.—Vaginal Hysterectomy for Cancer of the Cervix.
Closure of the peritoneum.

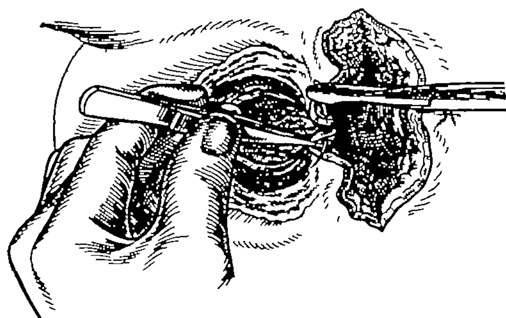


Fig 299.—Vaginal Hysterectomy for Cancer of the Cervix.
Suture of the inferior vaginal cylinder with catgut.

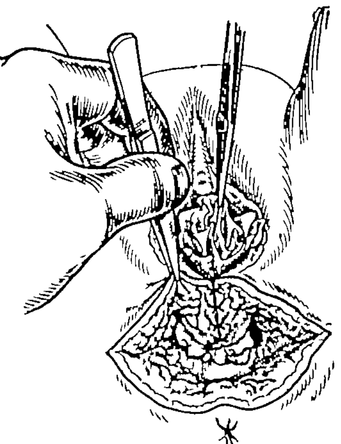


Fig 300 —Vaginal Hysterectomy for Cancer of the Cervix

The lower vaginal cylinder has been sutured with catgut. A drain introduced by the vulva is inserted as far as the sutured peritoneal wound. The perinæum will be re formed as after an ordinary perineorrhaphy

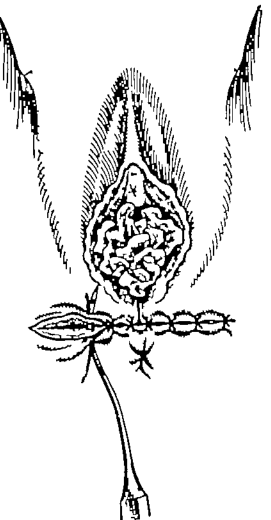


Fig 301 —Vaginal Hysterectomy for Cancer of the Cervix

The muscular levels have been brought into apposition. Some stitches on the subcutaneous cellular tissue.

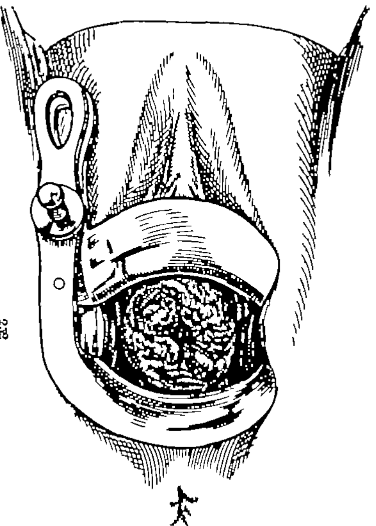


FIG 302.—VAGINAL HYSTERECTOMY FOR CANCER OF THE CERVIX.

Appearance of the cervix before the use of radium fungating cancer

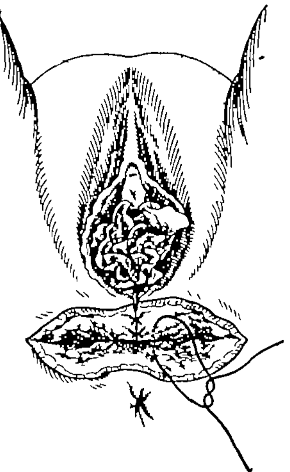


FIG 303.—VAGINAL HYSTERECTOMY FOR CANCER OF THE CERVIX.

The skin is brought together by thread; a drain is left in the vagina.

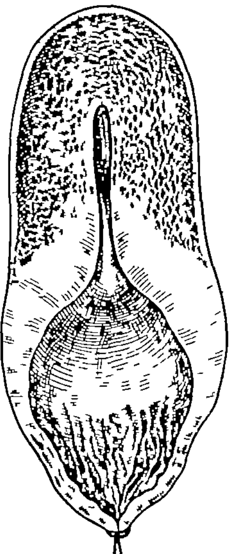


FIG 304.—VAGINAL HYSTERECTOMY FOR CANCER OF THE CERVIX. (CUNÉO'S METHOD.)

Appearance of the anatomical piece after vaginal extirpation Histological examination made by Rubens-Duval showed the uterus was transformed into a fibrous mass with no trace of epithelioma.

XIII

ASEPTIC TUMOURS OF THE ADNEXA

TUMOURS of the adnexa, whatever their inflammatory nature (salpingo-ovaritis) neoplastic hæmorrhagic, gravid cystic are treated differently, according to whether they are aseptic or not

A hæmato salpynx or a hydro-salpynx should not be treated like a suppurative salpingitis In this last case, moreover, it is not sufficient to remove the infected adnexa the whole tract of the tubes into the substance of the uterus must be got rid of, even the whole fundus should be sacrificed—hysterectomy of the fundus (Lecène)

In young women moreover it is advantageous to retain the menstrual periods, even if impregnation be removed

The treatment of aseptic unilateral tumours is extremely simple two clamps are placed on the broad ligament above and below the tumour, two cuts of the scissors separate the mass of the adnexa Two or three stitches in U re-form the broad ligament, produce hæmostasis, and bring about fixity of the uterus

The adjoining figures tell more than any description

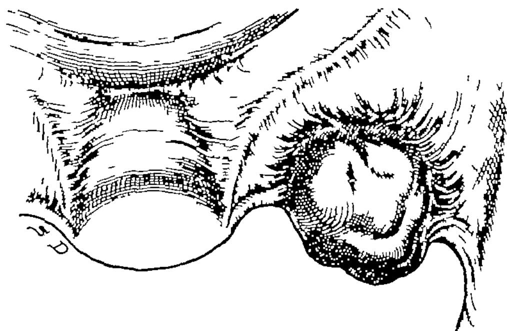


Fig 305.—Aseptic Unilateral Tumour of the Adnexa.

(Hæmato-salpynx) resection.

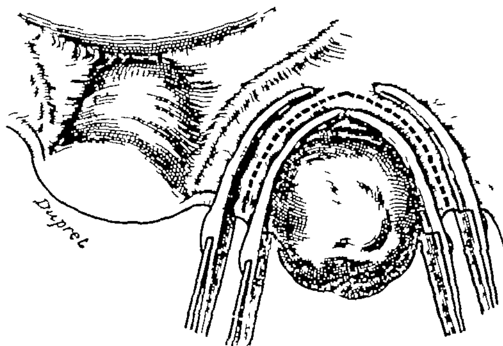


Fig 306.—Aseptic Unilateral Tumour of the Adnexa.

(Hæmato-salpynx) resection. Four clamps are applied to the broad ligament the dotted line indicates where the incision is made by the knife. Note the strong clamps of J L Faure.

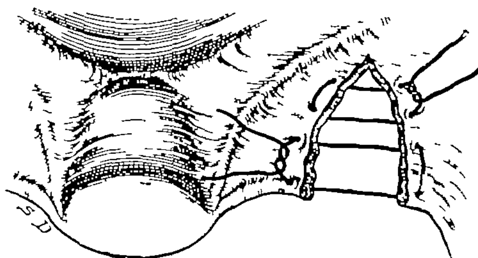


FIG 307.—ASEPTIC UNILATERAL TUMOUR OF THE ADNEXA.

(Hæmato-salpynx) resection. Two stitches in U have been passed close to the peripheral clamp, the tumour having been removed *en bloc* with two of the clamps; these two stitches in U are tied at the time the two clamps are withdrawn. The operation is finished. The Fallopian tube which is visible is aseptic. If it had suppurated, it would be necessary to resect it at the uterus by plunging a cautery deeply into its intra uterine part. If the lesion were bilateral and the woman young a whole or part of an ovary should be retained, and hysterectomy of the fundus performed, or simple resection of the tubes. The normal uterus or one or both ovaries should be entirely preserved.